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INTRACAVITY IRRADIATION OF CARCINOMA OF THE BLADDER*

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IN CHOOSING SUCH a subject, it is apparent that we did not pick an easy one. The world literature shows that there is a great difference of opinion regarding the treatment of this most serious of diseases—carcinoma of the bladder. It is apparent also that this cannot be considered one man's field, and therefore a surgeon and a radiotherapist are combining to write this paper. The patient is practically always referred originally to the urologist, and the use of radiotherapy will be largely a matter of his decision. When he finds that this method of treatment is advisable, he is the one who will consult with the radiotherapist to carry out the particular type of irradiation agreed upon.

MANAGEMENT OF BLADDER TUMOURS

Bladder tumours present one of our greatest challenges. They are often far advanced before they give rise to symptoms and, in the majority of cases, a bladder which has once been the site of a tumour will be the site either of recurrence or of development of a new tumour. Just why, we do not know.

We know that infections and resulting irritation do play a part in the production of bladder tumours since they are more common in men than in women, and of course we know that aniline dyes are a specific carcinogenic agent in cancer of the bladder.

Nearly all bladder tumours are epithelial in origin and all should be considered malignant or potentially so. The simplest classification is into papillary and non-papillary or infiltrating. Tumours are further classified as to the pathological degree of malignancy by Broders[1] and as to depth of penetration of bladder wall by Jewett and Strong[2] (1947) who have used the following groups:

A. Superficial tumour without involvement of muscle.
B_1. Superficial penetration of muscle.
B_2. Deep penetration of muscle.
C. Penetration through the muscle wall.

The surgical treatment is complicated by the fact that most tumours are near the vesical neck and in many cases removal of the tumour involves removal of the entire bladder and, as yet, we have no completely satisfactory method of diverting the urinary stream. We can, of course, do extremely wide partial cystectomies and the bladder will grow again, but there is still the problem of recurrence.

We treat bladder tumours as follows:

1. All papillary non-infiltrating and superficially infiltrating tumours, unless they are very numerous, should be dealt with by transurethral methods.

2. All single tumours which appear to be of a coarse nature and are of any considerable size and all non-papillary tumours which are, of course, mostly infiltrating and which occur on mobile portions of the bladder where one can get an adequate margin between the tumour and the vesical neck, should be widely excised even if it involves taking out one ureter.

3. Infiltrating tumours involving the vesical neck without fixation are dealt with by cystectomy.

4. Deeply infiltrating bladder tumours are the ones that present the real problems and are for the most part incurable. They are the ones which must be dealt with each on its own merits. Most of these are irradiated but we are treating an increasing number by morphine.

5. We are opposed to suprapubic cystotomy except where the tumour is to be resected. Our reasons are: (a) There is great danger of im-

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plantation of the tumour into the wound. (b) Since most tumours to be dealt with by means other than resection of the entire bladder wall occur about the bladder floor, they can be much more adequately visualized by transurethral methods. (c) One avoids the uncertainty of healing of the bladder. (d) Hospitalization is shorter and patients are more comfortable.

6. Where there have been numerous recurrences or where there are so many lesions that it is impractical to resect them all and where they are not deeply infiltrating, we are now using cobalt irradiation from a central source.

INTRACAVITY IRRADIATION OF CARCINOMA OF THE BLADDER

This leads us to a study of the value of irradiation. First with regard to radium implantation – Morton M. Kligerman *et al.*,[3] of Columbia University, have shown that a higher percentage of those with carcinoma of the bladder treated by radium implantation were clinically free from disease at any given time than of a similar group treated by segmental resection. They treated 198 cases with radium and 149 by segmental resection. The tumours were divided into two types, those for definitive treatment and those for palliative treatment. Those treated for cure included tumours which had involved the wall of the bladder but had not penetrated it, lesions which involved the internal meatus but did not reach down into the urethra proper, and lesions extending into the urethra if it was considered that the entire neoplasm was resectable. This group had a five-year survival rate of 22.3% when segmental resection was employed and 38.1% when radium implantation was used. They concluded that radium had a definite advantage over segmental resection.

While radium implantation has been used by other workers, there has been a trend in recent years to the use of radon seeds, the advantage being that these can be inserted into the tumour and the bladder can be closed. Many urologists feel that they can place these radon seeds adequately through the cystoscope and thus irradiate the carcinoma without opening the bladder. As a result of a study, James R. Winterringer[4] of the Mayo Clinic is inclined to think that the combination of transurethral removal plus implantation of radon seeds may merit more frequent use than it has been accorded. With this method he reports a 29% five-year survival rate, which is approximately the same as that reported by McDonald and Thompson[5] from the same clinic after total and partial cystectomy. Barringer[6] of New Canaan, Conn., supports the use of radon implantation. He states that the suprapubic method of implantation of the seeds was employed in 129 cases and the cystoscopic in 44 cases. His cure rate for papillary tumours was 52% and for infiltrating carcinoma 23.6%. One of the problems with radon is getting an even distribution of the irradiation, and Mary Douglas[7] of the Royal Infirmary, Edinburgh, has developed a special jig for supporting radon seed introducers to get a more even distribution. She advises the use of weak seeds, 0.3 mc. as against the larger 1 mc. seeds, giving thus an estimated average dosage of 3,000 r and adding the rest of the therapy by means of external irradiation, up to an average total of 6,000 r. There is something to be said for this, as it reduces the likelihood of an area of necrosis being produced by two seeds in close approximation, and it makes it possible to give to the bladder a cancericidal dose which would be impossible by external irradiation alone. Millen[8] of the Holt Radium Institute, Manchester, reports the use of radon seeds. He opens the bladder through a suprapubic approach, examines the tumours, removes the intravesical portion of the lesion, and implants a single plane of radon seeds, including a margin of tissue about 1.5 cm. beyond the edge of the tumour. Two-thirds of the seeds are used at the periphery and one-third in the centre of the lesion. He finds that the largest area possible to treat is 7 cm. in diameter with a tumour not greater than 4 cm. in diameter at the base. He reports a five-year survival rate of 60% in 55 cases thus treated.

Jacobs[9] of Glasgow uses radium for the same purpose as Millen[8] of Manchester uses radon. He deals with tumours of the bladder which are solitary, sessile, broad-based papillary carcinomata occupying the base and lower zones of the lateral walls; also infiltrative growths of the flat, ulcerative or nodular type. He opens the bladder and cuts away the projecting tumour, and aims at giving a dose of 7,000 r in 160 hours, or about seven days. He arranges the needles which are introduced into the tissues so that 95% of the radium is placed in the periphery and the remaining 5% in the centre of the lesion. This produced a 32% five-year survival rate.

In discussing a topic of this kind, it is not sufficient to think only of five-year survival rates. The morbidity from procedures used must also be considered. Most urologists write of the dangers of opening the bladder and the desire to avoid it if satisfactory results can still be obtained.

Several workers have developed methods of treating carcinoma of the bladder by inserting irradiation sources through the urethra. At the Royal Cancer Free Hospital, now the Royal Marsden Hospital, under the direction of Smithers,[10] treatment was previously given by radioactive sodium but Smithers now states there has been a change and he and his group are using radioactive colloidal gold, instilled directly into the bladder without a bag, and are planning to use yttrium colloid as an alternative. He has also used radioactive gold grain implants instead of radon seeds and radioactive tantalum wire. (This information comes from a private communication from Dr. Smithers, for which I wish to thank him.)

Milton Friedman and Lloyd Lewis,[11] of the Walter Reed General Hospital in the United States, have been using another method of intracavity irradiation long enough to quote five-year results. By their method a 25 mg. radium source is placed in the bladder in a special Foley catheter, so arranged that urine can drain from the bladder by way of the catheter during the time that treatment is in process. This method irradiates the whole internal bladder wall evenly. The bladder is opened suprapubically and the tip of the catheter brought up to the cystostomy. Treatment is given in two sessions, three to five days apart. The average total dose is from 5,500 r to 9,000 r, with approximately 4,000 r being given at initial application. This meets the requirements stated by Sir Stanford Cade,[12] who said that malignant tumours of the bladder, especially the infiltrating and ulcerative lesions, are not radiosensitive and high tissue doses are needed to obtain regression of the tumour. With 3,000-5,000 r no permanent results are obtained. With an increase to 6,000-8,500 r a remarkable improvement in the immediate results takes place, so that it is possible to state that if conditions permit the delivery of 8,000 r to the tumour, complete regression of the neoplasm is likely to result. Unfortunately, this does not mean permanent regression nor does it mean freedom from metastases. Sir Stanford Cade also stated that his physicists came to the conclusion that the optimum dosage rate is between 35 r and 45 r per hour. At this rate it takes nine to ten days to deliver a total tumour dose of 8,000 r to 9,000 r. It will be seen that Friedman's dosage figures use the time period of 11 or 12 days and a total dosage up to 9,000 r. Friedman has now modified his technique and uses a cobalt pellet instead of radium. In answer to my question regarding the comparative value of irradiation and external supervoltage therapy at 2 MeV, Dr. Friedman replied that he prefers using a cobalt pellet inside the bladder rather than two million volt rotation therapy. His chief reason is that the former is not as great an assault on the whole body of the patient as the supervoltage rotation therapy and also produces no radiation leukopenia or diarrhœa. He concludes, however, that for larger lesions supervoltage therapy may be necessary. His dosage now is from 8,000 to 10,000 gamma roentgens extended over a period of about 17 days with the cobalt pellet and 50 days with supervoltage radiation. (I wish to thank Dr. Friedman for this personal communication.)

PERSONAL TECHNIQUE

After talks with Dr. Friedman, the authors of this paper decided to try the intracavity irradiation of tumours of the bladder, using cobalt in a balloon. Our source is a 25 mc. pellet which is equivalent to 40 mg. radium. It has the advantage of being very small, measuring 6 mm. in length and 1 mm. in thickness, and it can be placed in the tube of the Foley catheter. The urine can trickle around it; therefore, only two passages are required, one to hold the pellet and allow drainage, and one for the introduction of the solution into the balloon. This solution is methylene blue, sodium iodide and sterile water. The methylene blue makes it possible to recognize the solution if there should be any leak from the balloon; the fluid draining from the bladder is retained for inspection. Also a small amount of sodium iodide makes it possible to outline the balloon in the bladder by x-ray (Fig. 1). The cobalt pellet is retained in the centre of the dilated balloon by a piece of ureteric catheter used as a spacer. We have been giving a dosage of 4,000 r at each sitting, which requires 2½ days. Four days later the procedure is repeated. A great problem still unsolved is the obtaining of catheters with perfectly symmetrical balloons.

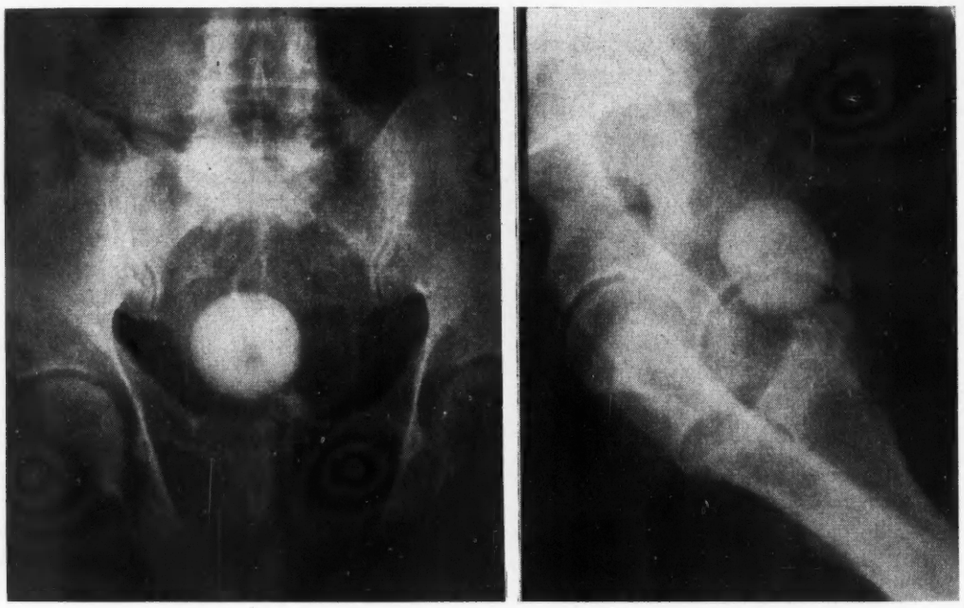

Fig. 1a Fig. 1b

Fig. 1.—In these records of x-ray examinations of the urinary bladder, the dilated balloon of the Foley catheter is noted in position. The opacity is due to the presence of sodium iodide. The cobalt pellet is seen just about the centre of the balloon in the lateral exposure.

Patients have had considerable reaction from this treatment, with burning and frequency, but after two or three weeks the symptoms subside and the patients become comfortable.

In one way this procedure differs radically from that used by Dr. Friedman. We do not approve of opening the bladder if it can be avoided, and therefore we have been inserting the Foley catheter without a cystostomy. The distortion of the upper limits of the bladder by the tip of the catheter would make it seem unlikely that we would be treating adequately any tumour in the vault of the bladder. Tumours along the side wall or in the trigone region, however, should be adequately irradiated. We have not had long enough experience to quote any figures that would have any meaning.

INFILTRATING CARCINOMA

To complete the picture, we consider now the treatment of infiltrating carcinomata too advanced to be dealt with surgically or by local use of irradiation. We might hope that external irradiation would give us a valuable method of treatment. Unfortunately, we are forced to agree with Sir Stanford Cade when he states that "x-ray therapy by the 200 kV. apparatus generally employed up to the present has proved most disappointing as the sole method of treatment".

We are all aware, of course, of the palliative effect of 200 kV. therapy, particularly in helping to reduce the size of the mass and control bleeding. It seems, however, to have no prolonged favourable effect.

This brings us then to a rather new method of approach, that of supervoltage irradiation using 1 MeV. or more. One opinion given by Buschke and Cantril[13] emphasizes that where infiltration through the muscle wall by the neoplasm has occurred, x-ray therapy fails to arrest the disease. Stapleton[14] of the Royal Marsden Hospital, London, reporting on his experience with use of the van de Graaff 2 MeV. x-ray, stated that he had used on infiltrating tumours a dosage of 5,500 r to 6,500 r in six weeks and that there was a decrease in incidence and severity of rectal reactions but no decrease in incidence of urinary frequency, dysuria or strangury over that seen with the 400 kV. therapy. He did not expect an improvement in survival rate but he did feel that it relieved symptoms in advanced local disease without adding to the patient's discomfort and he thought this might mean a longer survival for a few. Hare and Trump[15] report on results of 2 MeV. irradiation, treating a cylindrical area in the pelvis and using rotation with the patient upright. The cylinder of rotation was 14 cm. in diameter from front to back and 8 cm. broad. They gave a total of 8,000 r to the bladder in 35 treatment days. In patients receiving 6,000 r the initial response has been good but some have

had a recurrence. Early results of treatment indicated that good palliative effects were obtained. In nearly all cases there was a favourable response of the tumour, shown by disappearance of pain and bleeding. The palliative results have been so encouraging that the treatment is now advised for all patients with infiltrative carcinoma. Best results were obtained with early treatment. It also appears that the less surgery that has been carried out before irradiation the better will be the palliative effect. It will be noted that it is possible to give a dosage of 8,000 r, whereas with the 200 kV. machines 4,000 r is the maximum allowable because of troublesome skin reactions. Blomfield[16] concludes, "Taking all things into consideration, I would say that supervoltage x-ray therapy opens up new possibilities for the treatment of the bulkier infiltrating growths of the bladder which are beyond the range of radon implants or partial cystectomy. It offers enormous advantages over x-ray therapy at the lower voltages and it should become more useful as we obtain more experience with it. Properly handled, it does not carry any undue risk of complications." To those of us who are looking ahead to the use of supervoltage therapy this statement offers very great encouragement.

Through the kindness of Dr. Ivan Smith[17] I am able to quote his experience with cobalt beam direction equipment. He has treated 17 cases during the years 1952-1953 with good to excellent results in 12, minimal value in 4, and results not worth while in 1. He states that all these patients had recurrences and the only alternative treatment would have been cystectomy. Dosage was between 5,000 and 5,500 r in a period of three to four weeks with pin and arc technique, with two anterior and two posterior fields each 8 x 10 cm. in size. The exceptions were in those who had had cystotomy; in these an anterior field was used, placed directly over the scar to avoid recurrence in the wound. Dr. Smith plans increasing the tumour dose to 6,500 r or 7,000 r in five to six weeks. Occasionally a transitory proctitis lasted a week or two after treatment was completed.

CONCLUSIONS

Present trends in the treatment of cancer of the bladder may be summarized as follows:

1. For the very early type of tumour, which is single and superficial, surgical procedures remain the method of choice.

2. For multiple lesions, in which it is difficult to control all of the tumours by surgical means, and for tumours in which there is infiltration into but not through the bladder wall, some type of intracavity irradiation inside the bladder appears to be the most useful method of attack. This includes radium implantation; radon implantation, either directly through the cystoscope or through a cystostomy opening, depending on how easily the site can be reached; the use of a cobalt or radium source, and some of the experimental methods of use of radioactive sodium or other solutions placed in the bladder and allowed to come in contact directly with its wall.

3. For tumours which are infiltrating and definitely beyond the reach of limited surgery, a decision must be reached between total cystectomy and irradiation. The latter may take the form of implantation of radium or radon seeds, or the use of cobalt sources supplemented by external irradiation. If irradiation only can be used, the most favourable results are produced by supervoltage therapy through several ports or with rotation.

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RÉSUMÉ

Les tendances actuelles dans le traitement du cancer de la vessie peuvent se résumer comme suit:

1. Dans le cas d'une tumeur décelée dès son début, alors qu'elle est simple et superficielle, le traitement chirurgical demeure la meilleure méthode.

2. Dans les cas de lésions multiples, alors qu'il est difficile d'enlever toutes les tumeurs par opération chirurgicale, et dans les cas de tumeurs où il y a infiltration de la paroi vésicale mais non de part en part, il semble qu'un genre quelconque d'irradiation à l'intérieur de la vessie soit le moyen d'attaque le plus utile. Cette méthode comprend l'implantation de radium et de radon, soit sous observation directe par le cystoscope, soit par cystostomie, selon la situation des tumeurs; l'emploi de cobalt ou de radium, et quelques-unes des méthodes expérimentales d'emploi de sodium radioactif ou autres solutions introduites dans la vessie et permettant un contact direct avec la paroi.

3. Dans les cas de tumeurs avec infiltration impossibles à réséquer, il faut choisir entre la cystectomie totale et l'irradiation, laquelle consistera en implantation de radium ou de grains de radon ou dans la curiethérapie au cobalt avec, en plus, de l'irradiation externe. Si l'on ne peut employer que l'irradiation seule, on obtiendra les meilleurs résultats par la roentgenthérapie à supervoltage à champs croisés ou en rotation. M.R.D.

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MESTINON* (PYRIDOSTIGMINE BROMIDE) IN MYASTHENIA GRAVIS

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RESEARCH aimed at finding synthetic substances for use in place of physostigmine has resulted in the discovery of several preparations. The most active of these is pyridostigmine bromide—Mestinon (dimethyl carbamate of 3-hydroxy-1-methyl pyridium bromide), a heterocyclic agent of the alkylcarbamic group, with the nitrogen atom of the pyridine ring fulfilling the quaternary ammonium function of the molecule. Mestinon is about five times less toxic than prostigmine (neostigmine) and its effect on the intestines is only half as strong, both *in vitro* and *in vivo*, as that of the latter.[1]

In common with other substances of eserine type, Mestinon markedly inhibits the plasma pseudocholinesterase but it shows practically no inhibition of the true cholinesterase of red cells and muscle tissues when given in comparable doses.[2]

It is an excellent curare antidote but its decurarizing effect is quite independent of its inhibitory effect upon the cholinesterases.[2] Because of its anticurare properties and its low toxicity, Mestinon appeared suitable for clinical trial in patients with myasthenia gravis. Seibert[3] was the first to show that Mestinon when given in doses four times larger than prostigmine favourably influenced the myasthenic syndrome and that side-reactions if any were surprisingly mild. Other investigations[4-6] followed, and confirmed Seibert's findings.

In the present study, the effects of Mestinon were investigated over a period of 12 months in a group of patients with myasthenia gravis (Table I).

ILLUSTRATIVE CASE HISTORIES

CASE 1.—W.S. This patient has myasthenia of a bulbar and peripheral type of 25 years' duration. In order to control her weakness, the patient takes 6-8 tablets of prostigmine daily; on this medication she can remain fairly active for limited periods of time. Her clinical picture was characterized by weakness and fatigue in the early morning, prior to prostigmine, and a generalized slump towards the end of the day. When Mestinon, 8 tablets a day, was substituted for 8 tablets of prostigmine the response was most disappointing. Although there was some control of her myasthenic phenomena, the patient was weak and fatigued all day, and felt very depressed. After one week she reverted to prostigmine, and once more was able to lead a fairly active life.

One month later, Mestinon was tried again first in a 1:1 ratio with prostigmine (4 Mestinon and 4 prostigmine tablets); after a time Mestinon was gradually substituted for prostigmine until she was taking 6 tablets of the latter only. This second attempt to treat the patient with Mestinon was gratifying and at the same time most surprising in view of our initial failure with this drug. On this occasion her morning weakness and fatigue was absent when she was on Mestinon. She engaged in more vigorous activities, and at this time did not experience her usual slump towards the end of the day, as observed with prostigmine. At one time, a temporary shortage of Mestinon necessitated renewal of prostigmine. After taking only one tablet of prostigmine, the patient experienced a most violent intestinal colic, a phenomenon that had never occurred in her 20 years of prostigmine therapy. When Mestinon became once more available, she started with 6 tablets daily and she has maintained her improved clinical state.

She has continued on Mestinon for one year, obtaining a steadier and more uniform control of her myasthenic phenomena than on prostigmine, with total absence of side-effects.

CASE 3.—H.LaH. This married woman of 28 has been suffering from a bulbar and peripheral type of myasthenia for the last eight years.

Prior to Mestinon trials, she took 10-12 tablets of prostigmine a day, and on the whole her general condition fluctuated a great deal—up one day, and down the day after. Mestinon was administered to this patient for two days in a 1:1 ratio (5 Mestinon and 5 prostigmine tablets); as her response was very satisfactory, prostigmine was stopped altogether on the third day and she continued with 10 tablets of Mestinon only.

While on Mestinon, she felt remarkably well and strong, and could do a full day's work without getting the least tired. Eventually, she found that she could do with less Mestinon until she reached a dose of three tablets daily, at which level her symptoms were well controlled.

After two months, Mestinon was discontinued and the patient started again on prostigmine. Very surprisingly, it was found that even with increasing amounts of prostigmine it was almost impossible to control this patient's myasthenia adequately. Her condition deteriorated rapidly and she was unable to get out of bed in the morning, climb stairs, or walk for any distance. In order to control the myasthenia, her prostigmine requirement was gradually increased until she was taking as many as 36 tablets a day; even at that her response was very unsatisfactory.

After one month, prostigmine was discontinued and the patient started on 10 tablets of Mestinon daily. In a matter of 24 hours she improved sufficiently to go to work, a feat impossible for the last four weeks of prostigmine therapy. As on the previous occasion, she found that she could control her myasthenia with only 3 tablets of Mestinon a day, and continued on this dose during the following six months. At the end of that time, an attempt to try prostigmine with this patient once more proved entirely unsatisfactory. Her condition deteriorated rapidly and she was resistant to the increasing amounts of the drug.

Once more Mestinon promptly improved her myasthenic state; for the last six months the patient has continued exceedingly well and enjoys a normal life, using only small amounts of the drug (3-5 tablets a day).

CASE 4. L.A. This middle-aged man suffers from myasthenia of two years' duration. The patient's symptoms are chiefly confined to his bulbar musculature but at times there is a fair amount of peripheral weakness as well.

*I am grateful to Dr. Ruth Wolfe, Medical Director of Hoffmann-LaRoche Limited (Canada), for the generous supplies of Mestinon used in this trial.

TABLE I.

RESPONSE TO MESTINON IN 14 PATIENTS WITH MYASTHENIA GRAVIS.

Group A		*Group B*	*Group C*	*Group D*
Mestinon superior to prostigmine		*Mestinon with prostigmine superior to either Mestinon or prostigmine alone*	*No change*	*Mestinon inferior to prostigmine*
Initial response to Mestinon	*Subsequent response to Mestinon*			
1. W.S.—unsatisfactory (bulbar and peripheral)	Good	8. R.W.* (bulbar and peripheral)	11. H.N. (bulbar and peripheral)	13. A.R. (bulbar and peripheral)
2. O.S.—excellent (peripheral)	Excellent	9. G.E.* (peripheral)	12. P.B. (peripheral)	14. L.M. (peripheral)
3. H.LaH.—excellent (bulbar and peripheral)	Excellent	10. B.S. (bulbar and peripheral)		
4. G.A.—unsatisfactory (bulbar)	Good			
5. S.N.—excellent (peripheral)	Excellent			
6. G.G.—excellent (bulbar and peripheral)	Excellent			
7. B.B.—unsatisfactory (peripheral)	Good			

* less than one year follow-up.

At the time of the trial the patient was taking 12 tablets of prostigmine daily and was thus able to relieve some of his muscular weakness, the muscles of the eye and eyelids being the most resistant to treatment. While on prostigmine, he suffered from a troublesome diarrhœa and abdominal colic, which more than offset some of the advantages of prostigmine.

Mestinon, 12 tablets a day, although relieving him of diarrhœa and abdominal colic, was not as effective as prostigmine in controlling muscle weakness. Consequently, his medication was changed to 6 tablets of prostigmine and 6 tablets of Mestinon daily. On this combination he was able to obtain fair control of his myasthenia and at the same time was free of the troublesome intestinal phenomena. In the weeks that followed, prostigmine was gradually replaced by Mestinon; eventually he was able to achieve a satisfactory response with only 8 tablets of Mestinon daily and this was maintained for 12 months. On two occasions attempts were made to treat this patient with prostigmine only; these were entirely unsuccessful because of severe abdominal colic and diarrhœa.

CASE 5.—G.G. This woman, 24 years old, has bulbar and peripheral myasthenia of 3 years' duration. At the time of the trial, the patient was able to control her myasthenia with about 10 tablets of prostigmine daily. When 10 tablets of Mestinon were substituted for prostigmine, the patient observed that not since the onset of her illness had she felt so well and full of vigour. In the weeks that followed, she found that she needed less Mestinon, and reduced the dose to only 3 tablets per day.

To test whether this striking improvement was due to Mestinon and not to the remission of her myasthenia, prostigmine was substituted for Mestinon. This was followed by a surprising deterioration in muscle strength, which was not controlled with increasing amounts of prostigmine. Three days after prostigmine medication, the patient collapsed while getting out of bed and was admitted to hospital in a myasthenic crisis.

As soon as she was able to swallow, the patient again responded very well to Mestinon, 8 tablets a day, and left the hospital requiring only 3-6 tablets. Eventually she found that she could control her myasthenia with only 3 tablets of Mestinon daily, and on this dosage she continued remarkably well for three months. An attempt was then made to test this patient once more with prostigmine only. As on the previous occasion, her strength rapidly declined, and she required increasing amounts of the drug with only partial control of her symptoms. After three days of prostigmine she was once more given Mestinon; symptoms rapidly improved, and on the following day she was able to engage in her normal activities. For the last 12 months she has continued very well on only 3 tablets of Mestinon.

CASE 8.—G.E. This married woman, 35 years of age, has myasthenia of 10 years' duration; her symptoms are chiefly confined to peripheral musculature but occasionally there is a fair amount of bulbar weakness as well.

Prior to Mestinon, the patient obtained only inadequate control of weakness with 8-10 tablets of prostigmine and she led a very restricted life at home. When Mestinon was given to her in conjunction with prostigmine (4 Mestinon and 4 prostigmine tablets daily), a most spectacular improvement was observed. In a single day, she cleaned the bathroom, waxed floors and engaged in all kinds of domestic activities, which before the Mestinon treatment would have been impossible without help. Shopping three times a week did not tire her nearly as badly as had one shopping expedition before, and she

did not require the afternoon rest previously found essential.

In the weeks that followed she reduced her medication to 3 Mestinon and 3 prostigmine tablets a day, and with this combination she has maintained her improvement.

CASE 9.—R.W. This boy, 15 years old, has myasthenia of 2-3 years' duration; his weakness is bulbar and peripheral in character. Prior to Mestinon, he managed to obtain good but by no means complete control of his myasthenia phenomena with 12 tablets of prostigmine daily. The patient started with 6 tablets of prostigmine and 6 tablets of Mestinon a day; using this combination, he felt so vastly improved that within two months he reduced it to 3 Mestinon and 3 prostigmine a day.

For the past 6 months he has enjoyed perfect health and excels in all kinds of physical activities, such as cycling, football, fishing and hunting. He has largely regained the control of his facial expression, which was not benefited by prostigmine.

CASE 13.—A.R. This woman of 27 has bulbar and peripheral myasthenia of 6 years' duration. She takes about 32 tablets of prostigmine a day and several attempts in the last 12 months to administer Mestinon either singly or in combination with prostigmine have proved entirely unsatisfactory; consequently she continues with prostigmine alone.

COMMENTS

A one-year trial of a new prostigmine analogue, Mestinon (pyridostigmine), has shown this drug to be more effective than prostigmine in 7 of 11 patients (Group A—Table I), because of its superior ability to control myasthenic phenomena and the absence of side-effects after prolonged use.

However, in some of these patients (W.S., L.A. and B.B.—Table I) the beneficial response to Mestinon was not immediately apparent after a first or even second trial with the drug. It is not known whether this was due to the sudden change-over from prostigmine or to some individual tolerance factor in myasthenia. In three patients (G.E., R.W. and B.S., Group B—Table I) who responded fairly well to prostigmine or to Mestinon alone (B.S.), the combination of prostigmine with Mestinon produced a clinical response which by far surpassed the effect of either taken separately. In two patients (H.N. and P.G., Group C—Table I) repeated trials with Mestinon produced no appreciable change in their myasthenic condition as compared with prostigmine. In the other two patients (A.R. and L.M., Group D—Table I) Mestinon was inadequate in controlling the muscle weakness, either when given alone or in combination with prostigmine, and eventually they reverted to the older medication.

In four of our patients (from Group A) in whom Mestinon was found superior to prostigmine abrupt cessation of the drug and its replacement by prostigmine produced severe gastrointestinal upset in two patients (W.S. and L.A.—Table I), and in the other two (H.LaH. and G.G.) sudden deterioration of myasthenia which they were unable to keep in check even with increasing amounts of prostigmine. The latter phenomenon following reinstitution of prostigmine therapy after abrupt cessation of Mestinon has also been reported by others.[4]

In general, it can be assumed that 60 mg. of Mestinon can be safely substituted for 15 mg. of prostigmine, although in patients responding well to the former this ratio is frequently much less.

At no time during our trials was there any evidence of parasympathomimetic stimulation or cholinergic phenomena, even when high doses of Mestinon were given for long periods of time. This relative lack of gastrointestinal stimulation makes Mestinon superior to prostigmine in the treatment of myasthenia gravis. However, it should be borne in mind that any toxic phenomena following Mestinon over-dosage or sensitivity may differ widely from those observed with prostigmine, largely because of the fundamental differences of the two drugs in their effect on the plasma and skeletal cholinesterases.

Our studies with Mestinon extending over a one-year period indicate that, either alone or in combination with prostigmine, it is the drug of choice in the majority of patients with myasthenia gravis: (1) because some patients resistant to prostigmine have shown an excellent response to Mestinon; (2) because the drug appears to be relatively non-toxic.

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RÉSUMÉ

L'auteur rapporte les résultats obtenus chez un groupe de malades souffrant de myasthénie grave, traités pendant une période de douze mois au bromure de pyridostigmine (Mestinon, marque déposée, de Hoffmann-LaRoche Ltée.), préparation synthetique cherchant à remplacer la physostigmine. L'emploi de ce médicament a donné des résultats supérieurs à ceux obtenus par la prostigmine chez sept malades d'un groupe de onze. Les effets secondaires furent minimes ou même absents, mais l'amélioration s'est quelquefois faite attendre. Les deux produits employés simultanément ont semblé produire un effet synergique. Quatre malades ayant bien réagi au Mestinon accusèrent des symptômes gastro-intestinaux marqués à la prostigmine. Chez deux d'entre eux, la myasthénie s'aggrava d'une manière incontrôlable par la prostigmine. La dose habituelle de Mestinon est de l'ordre de 60 mg. M.R.D.

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FLEXOR TENDON INJURIES*

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DIVISION OF FLEXOR TENDONS of the fingers or thumb within their sheaths is a serious injury. A poor result leaves a disability which may reduce the earning power of the patient and so has an important economic aspect. Although the injury is not uncommon, few surgeons are required to deal with a sufficient number of cases to gain a wide experience. This lack of experience is the only reason for the survival of the traditional methods of treatment, which produce such very poor results. It has been difficult to introduce widely an understanding of the modern methods of management, even though the results are so much better. It is unfortunate that these injuries are often not recognized as important and are treated as minor injuries without proper consideration and without proper facilities.

This paper will present the modern concept in the treatment of flexor tendon injuries in the light of our experience at the Toronto General Hospital.

It is necessary first to decide what constitutes a successful result. A successful repair may be part of a poor result; conversely, an acceptable result may contain only a small measure of success as far as tendon function is concerned. The explanation of this paradox is found when the disability of the patient with a divided flexor tendon is studied. Lack of active movement is not his only disability; lack of stability is equally important. For example, we may consider the complaint of the patient who has divided the profundus tendon distal to the insertion of the sublimis. The terminal interphalangeal joint has lost its power to flex actively, but the patient complains not of this lack of movement, but of the lack of stability; the joint collapses into extension when any pressure is placed upon it. Thus the ability to hold objects is greatly impaired. Stability must be in the position of function, and at the terminal interphalangeal joint this is about 30° of flexion. If the joint is stable in this position because of tenodesis, fusion or joint stiffness, the disability if any is slight. The movement at the two proximal joints of the finger provides the necessary flexion.

A similar consideration of the disability due to division of both tendons forces the conclusion upon us that stability and position of the interphalangeal joints is of prime importance, and that active movement at these joints must be obtained in such a way that it centres about the position of function. If success in obtaining movement may be limited, as it often is, then that movement must be useful. For example, if as a result of tendon repair only 30° of active movement is obtained at the proximal interphalangeal joint and this 30° of movement is from 80° to 110°, the disability is considerable. On the other hand, if the 30° of movement were from full extension to 30°, the disability would be much less, and if this 30° of movement were from 30° to 60°, the disability would be less again. This illustrates the importance of position when discussing range of movement.

It is with these considerations in mind that the treatment of divided flexor tendons should be planned. In our cases, there were no successful primary tendon sutures in the fingers. Although tendon suture in the thumb has a better reputation, this is quite undeserved, for primary suture of thumb tendons had very poor results in all instances. This experience is not unique; it is widely confirmed.[1, 2]

There are many reasons why primary tendon suture fails. An injured tendon swells while healing and fills the sheath, to which it adheres. Primary repair requires that the suture line in the tendon be adjacent to the suture line of the wound. The two adhere during healing. Primary tendon suture requires immobilization of the affected finger in acute flexion to relieve tension. Joints stiffen and tendon adhesions spoil the result. The acutely flexed finger with no movement is useless because the fundamental principle that the position of function be maintained is violated.

Repair by a tendon graft avoids all of the foregoing pitfalls. The graft is small in diameter; when it swells it does not tightly fill the sheath. Suture lines in the tendon are not adjacent to a wound. Furthermore, the graft may be made long enough for relief of tension to be achieved without immobilizing the finger in acute flexion. The position of function is maintained and any movement obtained as a result of this repair will be useful.

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Practical experience has strengthened this view. Tendon graft repair of divided flexor tendons within their sheath is the method of choice. This should not be done as a primary procedure in most cases. Fear of wound infection which would alter the result usually dictates an elective repair. Stiffness of joints precludes a good result. The fingers must first be mobilized, and this may require a preliminary operation. The provision of a motor to a stiff finger is an elementary error often attempted.

ing not only tendons but perhaps bone and nerve. The principles of care of these wounds have been emphasized by Mason[3] and Koch.[4] To repair at the same time nerve, bone, tendon and perhaps even skin by grafting will produce a bad result. Wherever there is skin loss, the tendon should be left divided and attention turned to closure of the wound. These "untidy" wounds may contain also a divided digital nerve or even a fracture. In these, nerves may be sutured and fractures reduced but the tendon should

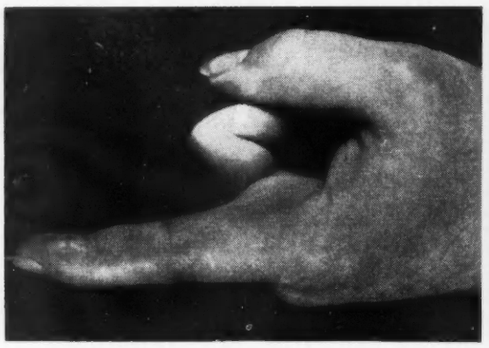

Fig. 1

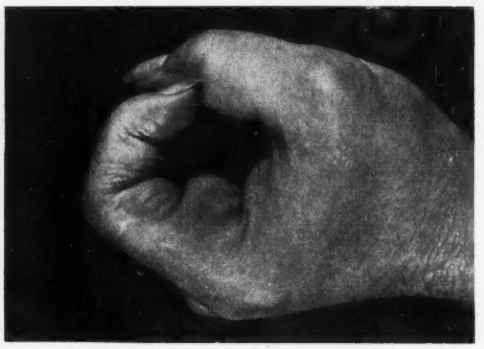

Fig. 2

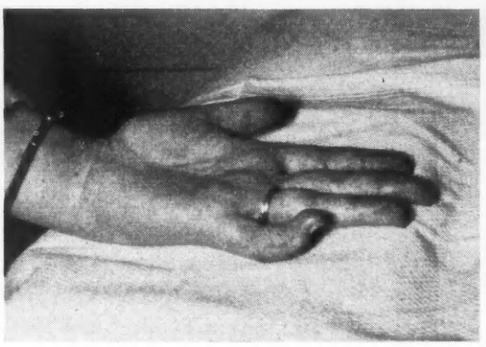

Fig. 3

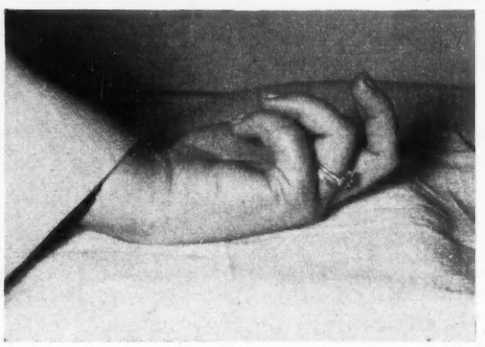

Fig. 4

Fig. 1.—Index finger in extension ten weeks after tendon graft. Injury four months previous. **Fig. 2.**—Same case as Fig. 1 in full flexion ten weeks after tendon graft. Illustrating a good result. **Fig. 3.**—Little finger six months after tendon graft fully extended showing acceptable position. **Fig. 4.**—Same case as Fig. 3 in full flexion showing limited movement but nonetheless a good result.

ACUTE INJURIES INVOLVING FLEXOR TENDONS

It is remarkable how important an injury may occur through a small wound. Not only may both flexor tendons be divided, but a digital nerve also may be cut. Careful examination of sensation as well as tendon function is mandatory. More severe injuries involving the tendons may be accompanied by fractures, perhaps compound, or loss of skin.

In planning treatment, it is wise to hold fast to elementary rules and take no short cuts. The treatment of the primary wound is of vital importance, especially in the case where the wound is extensive and part of a crushing injury involv-

never be repaired. This must wait until healing is complete and passive movement of the digit has been restored. Many months may be required for this. The same is true even if there is no skin loss. Any fracture in a finger with a divided flexor tendon must be treated first and treated alone. If nerve injury is also present, nerve suture may accompany the reduction of the fracture.

Nerve and tendon injury may be repaired together at once, but there are stringent requirements for this. The wound must be clean, must be incised and should be less than three hours old when the repair is begun. Many crippled fingers result from ignoring these requirements—

fingers ruined by infection and beyond salvage because of joint stiffness. On only two occasions in our group of cases was primary repair done; both were incised wounds less than one hour old, and the repair was by primary tendon graft.

In the great majority of cases where the wound is dirty, old or extensive, simple closure of the wound, after cutting back the cut ends of the flexor tendons with repair of the digital nerve if injured, is all that should be done. Six weeks later, when healing is sound and passive movement is complete, tendon graft repair is undertaken.

OLD INJURY INVOLVING DIVISION OF FLEXOR TENDONS OR FAILED REPAIR WITH POOR RESULT

Many cases when first seen are not acute. In some there is only a flail finger with good passive movement at all joints. Repair by tendon graft may be done right away. However, there is a large group of cases where primary tendon suture has been attempted. Here the finger is flexed at the interphalangeal joints beyond the position of function. There is little, if any, active movement, and extension is impossible because of tendon adhesions. If the condition is many months old, joint change also is taking place. These cases require immediate operation to resect the stuck tendons and excise unwanted scar tissue and contracted tendon sheath. If this results in free passive movement of the finger, tendon grafting may be done at the same operation. If, on the other hand, there is stiffness of passive movement, then the wound should be closed. Replacement of the tendon must wait upon the return of good passive movement and this may require weeks of physiotherapy.

SOME NOTES ON THE TENDON GRAFT OPERATION

Three things affect the success of operation. First is the physiological reaction of the patient's tissues to the graft. Will it heal so that sliding is possible? This is not a controllable factor at present, but may be in the future.

Second is the ability of the patient to intelligently and faithfully carry out his exercises after the cast has been removed. It is much more important for the surgeon to train the patient himself than to provide a physiotherapist.

The third factor is the skill of the surgeon. Meticulous dissection, gentle handling of tissues, and absolute hæmostasis are nowhere more important. The surgical details are shown in the illustrations. The author has been particularly impressed by the improvement in the speed of recovery and also in the final range of movement obtained when the tendon graft is anastomosed to the cut end of the profundus tendon in the manner shown in Fig. 8. Older methods of anas-

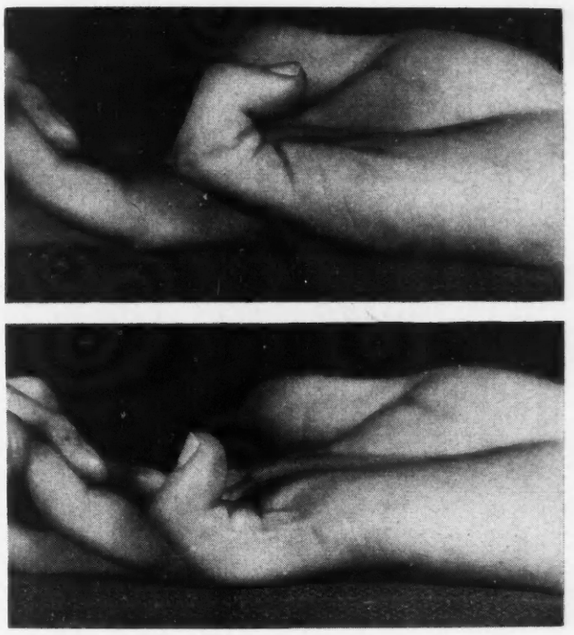

Fig. 5.—A poor result of primary tendon suture. About 45° of movement at the proximal interphalangeal joint is useless because of a 90° fixed flexion deformity at the terminal interphalangeal joint.

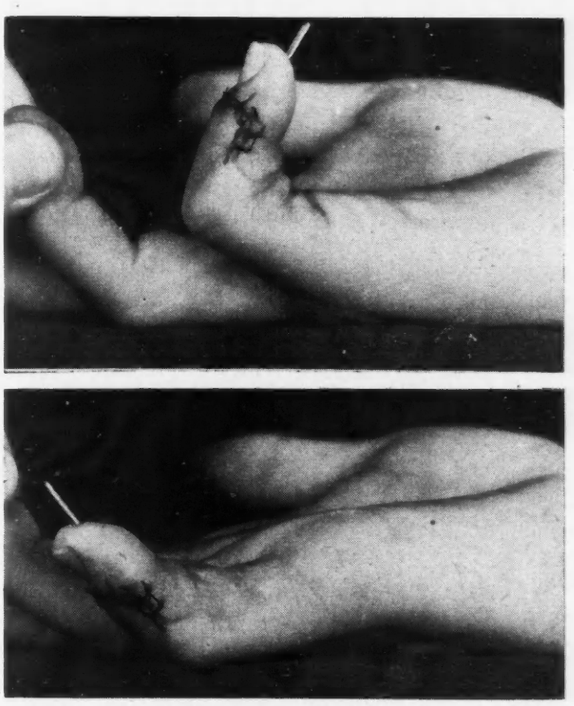

Fig. 6.—Same case as Fig. 5 after correction of terminal interphalangeal joint flexion deformity by fusion. This has converted a poor result into a good one.

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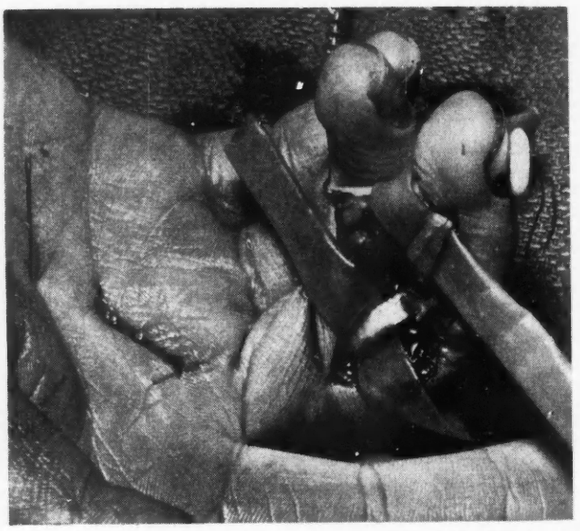

Fig. 7.—The middle finger is opened and shows the tendon graft in place, attached distally by means of the button which is visible and proximally to the profundus tendon deep to the palmar incision. The needle transfixes the profundus tendon to relieve tension during operation.

tomosing the graft to the profundus tendon produce a much greater bulk and it is difficult to bury the cut tendon surfaces. This technique produces a smooth anastomosis with no cut surface to stick to surrounding tissue. Fig. 8 also illustrates the method of attachment of the tendon graft to the terminal segment. This is a simple method and, in the author's experience, has been just as effective as the more complicated methods frequently used.

After closure of the wound, a cast is applied with the wrist in moderate flexion and the affected finger in the position of function. The cast is removed at the end of 3½ weeks and the patient is allowed to begin gentle movement. One week later the button in the terminal segment is removed and vigorous exercise is begun.

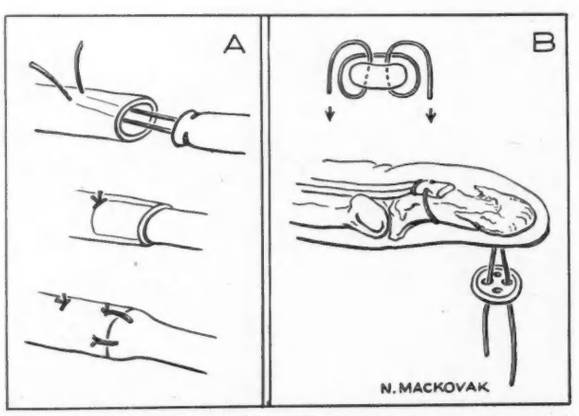

Fig. 8.—(A) Details of the anastomosis of the graft (small) to the profundus tendon (large) by means of hollowing out the larger profundus. (B) Details of the attachment of the graft to the terminal phalanx with one silk suture.

In this we follow the practice of Mason and Allen.[5] It has been suggested, and indeed practised by Pulvertaft,[6] that this period of immobilization is not necessary. He has suggested that if the wrist is kept in acute flexion there is not sufficient flexor power remaining to disrupt the suture lines of the tendon graft. However, his experience has not been universally confirmed.[1]

The donor tendon, in the author's opinion, should always be one of the long extensors of the toes taken through a long incision to preserve paratenon. These tendons are ideal in length, in paratenon and size. Palmaris longus has been widely used but has, for the author, insuperable disadvantages. It is too short; to get the required 9 cm. in length, it is necessary to dissect it up into the muscle and there is no paratenon in that part. Further, it is usually larger than desirable and is often absent. Finally, the flexor surface scar on the forearm is ugly.

RESULTS

Where tendon graft repair is carried out as the first definitive treatment, the results have been good. Range of active movement varies with the case from the remarkable to none at all (in a very few cases). In this series, seven cases had little or no active movement at the proximal interphalangeal joint after removal of the cast but had good passive movement and a finger in good position. It is important to recognize that, if there is no appreciable active movement one week after the cast has been removed, there never will be any. Continuing physiotherapy is useless. Physiotherapy can only increase a range of movement where there is movement to begin with.

A special method has been worked out to deal with this state of affairs and has been successful in converting these poor results into good ones. A median, ulnar and radial nerve block is done at the wrist. This produces an anæsthetic hand which retains the ability to move the fingers with the long flexors. The finger with the adherent tendon is then opened and the tendon completely freed. It is usually necessary to free the graft through an incision in the palm as well. When all restriction has been released and the patient moves his finger well when asked, the wound is closed. He is then instructed to keep the finger moving and, indeed, is awakened at intervals at night to do so, at least for the first few nights. The result of this management has

been successful in giving a great increase in movement to all of the cases. It might be noted here that these seven cases were all ones in which the anastomosis of the graft to the profundus tendon was done in the usual fashion and not in the more desirable telescopic fashion illustrated here and used in all of our later cases.

There are other ways of improving a poor result. Occasionally, one joint in a finger will be in very poor position with little or no movement. The joints proximal and distal to this disabled joint may be in good position and have a fair range of movement. Under these circumstances, fusion of the crippled joint in good position will convert a very bad result into quite an acceptable one. Fig. 5 illustrates a poor result of primary tendon suture. The acute flexion deformity of the terminal interphalangeal joint makes the finger useless, even though the proximal interphalangeal joint has 30° of movement in good position. The finger was salvaged by fusing the terminal interphalangeal joint in good position, thus making useful the 30° of active movement at the proximal interphalangeal joint.

SUMMARY

The importance of flexor tendon injuries has been discussed and the criteria of good and poor results examined. Experience has shown that primary tendon suture is permissible only in very unusual circumstances and that repair by elective tendon graft operation is desirable.

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RÉSUMÉ

La section d'un tendon fléchisseur des doigts est un accident passablement fréquent et une guérison incomplète entraîne souvent une sérieuse incapacité. Cependant, la plupart des chirurgiens en voient si peu souvent qu'ils ne peuvent acquérir l'expérience qui leur permettrait d'abandonner les vieilles méthodes de traitement, désuètes et inefficaces, et d'accepter les innovations de technique. L'auteur affirme n'avoir jamais eu de succès dans la suture primaire des tendons des doigts, y compris le pouce. La raison de ces échecs résiderait dans l'œdème du tendon lésé qui le porte à adhérer à sa gaîne. L'emploi d'un greffon résout le problème en éloignant les lignes de suture de l'endroit de la plaie et en permettant assez de jeu pour éviter l'immobilisation du doigt dans la position de flexion extrême. Cette interventions peut rarement se pratiquer de prime abord à cause des risques d'infection qui accompagnent la blessure et ne doit être entreprise que lorsque les articulations du doigt ont perdu leur rigidité. Dans les cas de traumatisme, avec perte de peau, fracture, ou lésion nerveuse, la plaie doit être refermée, par greffe cutanée si nécessaire. la fracture réduite et les nerfs recousus, mais le tendon ne doit pas être réparée dès lors. Nerfs et tendons peuvent à la rigueur être traités de pair. L'infection et l'immobilisation articulaire qui en résulte presque infailliblement doivent être évitées à tout prix. Le succès de l'opération est basé sur trois points; (1) la réaction physiologique des tissus du malade au greffon; ce facteur est actuellement imprévisible; (2) la pratique intelligente et constante des exercices, une fois le plâtre enlevé, ce qui dépend plus du malade lui-même que du physiothérapeute; (3) l'habilité technique de l'opérateur s'étendant à la dissection méticuleuse, la manipulation délicate des tissus et l'hémostase absolue. L'auteur fait part de ses méthodes et des résultats qu'il a obtenus. M.R.D.

THE PROGNOSIS OF PATIENTS WITH INTERMITTENT CLAUDICATION*

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INTERMITTENT CLAUDICATION results from arterial narrowing, usually due to atherosclerosis and less often due to thrombo-angiitis obliterans. The outlook for the affected limb depends upon changes in the peripheral vessels, but life expectancy is strongly influenced by the extent and severity of cerebral and coronary arterial disease. This study has been made to find out what happens to patients with intermittent claudication as years pass by and to try to learn what facts help in making a prognosis concerning life as well as limb.

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†John and Mary R. Markle Scholar in Medical Science.

SELECTION OF PATIENTS

The symptom, intermittent claudication, regardless of the type of underlying vascular disease, has been the sole criterion for inclusion. In the future it may be possible to give precise pathological diagnoses for living patients, but until that day comes differentiation will be unreliable. Thrombo-angiitis obliterans may be clinically indistinguishable from atherosclerosis

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and even the pathologist may have difficulty in telling the two conditions apart, particularly if only a small portion of the blood vessels of the extremity is available for examination.

By common usage the term intermittent claudication refers to a syndrome characterized by pain in the lower limb, brought on by exercise, limiting or preventing further exertion, and relieved by resting, usually within a few minutes. The pain, though often described as a cramp, is actually steady. It is most often in the calf but may be confined to or spread to the foot, front of the leg, thigh, hip or buttock. Any patient was excluded whose pain failed to fulfil these requirements, whose memory was grossly unreliable or who suffered from a neurosis which clouded the events in the history.

This group of patients cannot be considered truly representative of all patients with intermittent claudication. Every patient in this study had been under the care of staff members of King's College Hospital, London, England. Most of them had been admitted to the wards for detailed study and treatment. Severe claudication and complications such as gangrene were common reasons for referral to hospital. On the other hand, many patients with only moderate disability were referred for sympathectomy in the hope that the operation would relieve pain, or at least prevent gangrene and infection.

The diagnostic file of the hospital was searched for patients known to have been suffering from intermittent claudication three or more years before the beginning of this study. Case histories were available from 1944 to 1953. Table I shows the number of patients involved in the study.

TABLE I.

FOLLOW-UP ON 110 CASES OF INTERMITTENT CLAUDICATION ATTENDING KING'S COLLEGE HOSPITAL, LONDON, 1944-53

Patients alive and examined, 1953-54	72
Patients alive, traced by letter	4
Patients dead at time of study	32
Patients not traced	2
Total number of cases	110

OBSERVATIONS

Sex.—Of the 108 patients available for study, 101 were males (94%) and only 7 females. The marked predominance of males has been found in other series. Of 79 patients with intermittent claudication studied by McDonald,[1] 74 were males (94%). In a group of 280 cases diagnosed as "thrombo-arteriosclerosis obliterans", 240 were males (86%).[2] Forty-two of 47 patients with intermittent claudication of the hip were males (89%).[3]

In arteriosclerotic heart disease also, a high incidence has been reported in males, but to a lesser degree: of 6,882 patients with angina pectoris, 80.3% were male;[4] 77.4% of 500 patients with myocardial infarction were male.[5]

Age at onset of intermittent claudication.—The time of onset was sought with particular care and whenever possible checked with previous hospital records or the notes of the family doctor (Table II).

Claudication appeared before the age of 50 in more than 25% of the cases and before 60 in 61%. The commonest decade of onset was 50 to 59.

In McDonald's group 20% began to experience claudication before the age of 50 and the commonest decade of onset was also the sixth.[1]

The onset was later in women than in men: before 60 in 64 of 101 men, after 60 in 5 of 7 women. The numbers, though too small to be statistically significant, conform with the observation that angina pectoris and myocardial infarction have a later onset in women.[4, 5] It is interesting to compare the age incidence of this group of patients with a group suffering from intermittent claudication of the hip,[3] a group with angina pectoris[4] and a group with myocardial infarction analyzed in terms of the age at the first attack,[5] as shown in Table III.

Mortality.—Table IV shows the number dying each year after claudication began and, incidentally, demonstrates that commonly claudication may exist for many years. Thirteen per cent died within three years of the onset of claudication. It will be noted that for each year of claudication there was an average mortality rate of about 4%, with a range from 1 to 7%. Because not all the patients had been followed up for five years, only an approximation of 25% can be given for the five-year mortality rate.

No follow-up study with mortality figures has been found in the literature on patients with intermittent claudication. Hines and Barker,[2] in their study of arteriosclerosis obliterans, were able to obtain satisfactory information by follow-up letters from 116 out of a total of 280 patients. They wrote: "54.6% died within three years of

TABLE II.

AGE AT ONSET OF CLAUDICATION

Age at onset in years	*20–29*	*30–39*	*40–49*	*50–59*	*60–69*	*70–79*	*80 and over*
Males	4	9	17	34	30	6	1
Females			1	1	3	2	
Total (108)	4	9	18	35	33	8	1

their first visit to the clinic. The majority died in a manner which was suggestive of coronary thrombosis." However, over half of their patients had ulceration or gangrene, so that a more advanced stage of peripheral vascular disease was represented. The bald statement has been made that "Nearly all those who complain of intermittent claudication at the age of 55 to 60 years, however treated, are dead of coronary artery disease within five years."[6] In this series there were 23 patients who complained of intermittent claudication at the age of 55 to 60 years and who were followed up for at least five years. Sixteen survived five years; seven did not.

Incidence of hypertension and arteriosclerotic heart disease.—A history of angina pectoris was given by 22 patients (20%). Electrocardiograms were taken in 86 cases, with the following results: evidence of myocardial infarction, recent or old, was observed in 11 and abnormalities of conduction, ischæmic T wave changes or hypertensive patterns in 29. Thus, 47% of the electrocardiograms were abnormal. These findings resemble those of McDonald,[1] who reported that 29% of a group of 79 patients suffering from claudication had angina, and 39% had abnormal electrocardiograms.

TABLE III.

COMPARISON OF AGE OF ONSET IN 108 CASES OF INTERMITTENT CLAUDICATION AND GROUPS OF CLAUDICATION OF HIP, ANGINA PECTORIS AND MYOCARDIAL INFARCTION

Age	*Onset of claudication this series (108 patients)*	*Hip claudication[3] (47 patients)*	*Angina pectoris[4] (6,882 patients)*	*Myocardial infarction[5] (500 patients)*
	%	%	%	%
20 - 29	4	0	2	2
30 - 39	8	4		6
40 - 49	17	26	16	21
50 - 59	32	38	36	36
60 - 69	31	30	35	28
70 and over	8	2	11	7

An average of blood pressure readings above 150/100 mm. Hg was arbitrarily called hypertension. When the patient was seen personally, the blood pressure was measured at the beginning and end of the physical examination, with the patient recumbent. Readings from the hospital notes or records of the family doctors were added, and the average was computed. Forty patients in this series had hypertension.

TABLE IV.

MORTALITY EACH YEAR AFTER ONSET OF CLAUDICATION

Years after onset of claudication	*0-1*	*1-2*	*2-3*	*3-4*	*4-5*	*5-6*	*6-7*	*7-8*	*8-10 (2 yr.)*	*10-15 (5 yr.)*	*15+*
Number reaching that year of claudication	108	107	102	95	77	61	48	36	26*	19	5
Number dying during that year of claudication	1	5	7	5	4	1	3	2	1	2	1
Percentage dying per year	1	5	7	5	5	2	6	6	2	2	—

TABLE V.

INCIDENCE OF AMPUTATION IN RELATION TO DURATION OF CLAUDICATION

Years of claudication	*0-1*	*1-2*	*2-3*	*3-4*	*4-5*	*5-6*	*6-7*	*7-8*	*8-10*	*10-15*	*15+*
Number of patients.	108	107	102	95	77	61	48	36	26	19	5
Total with amputations.....	5	8	14	13	14	11	9	7	6	6	3
Percentage of patients with amputations...	5	7	14	14	18	18	19	19	23	32	60

Causes of death, with particular reference to cardiovascular disease.—Of the 32 deaths in this series, 17 could be attributed to cardiovascular disease with fair certainty, and coronary artery disease was probably the cause of death in a further four. The conditions responsible were arteriosclerotic heart disease in 12, cerebral infarction or hæmorrhage in seven, hypertensive heart disease in one and aortic thrombosis in one.

Ten of the deaths were due to conditions other than cardiovascular disease: four to carcinoma, three to pneumonia, one to pancreatitis following gastrectomy, one to hæmorrhage from a duodenal ulcer and one to suicide. The cause of death could not be ascertained in one case.

Hypertension was present in 15 of the 21 who died of cardiovascular disease but in only two of the 10 dying from other causes.

Incidence of amputation.—Twenty-seven patients had gangrene of the toes or feet at some time, and a similar number had to have amputations (multiple in some cases). Amputation was done for gangrene in most cases, for infection in a few, and for intractable pain in one. The percentage of amputees rose until the third year of claudication and then remained fairly constant until about the eighth year. The incidence of amputation was high in those who survived ten or more years (Table V).

Table VI shows at what duration of claudication the first amputation was done. The necessity for the initial amputation arose more commonly in the first five years of claudication.

The mortality rate for the amputees was 33% (nine deaths in 27 cases) and for the non-amputees 28% (23 deaths in 81 cases), a difference which is not significant.

FACTORS RELATED TO MORTALITY AND THE OCCURRENCE OF GANGRENE

1. *Age of onset.*—When a division was made into three groups: those with claudication beginning before the age of 50, those in whom it commenced in the 50-59 year period, and those in whom it began at 60 years or later, it was found, speaking generally, that: (a) The younger the patient when his claudication began, the longer it had been present when seen at follow-up (see Table VII). (b) The annual death rate rose with a rise in the age of onset (see Table VIII). (c) In patients with an earlier onset of claudication the incidence of amputation tended to be lower and amputation was required later in the course of the disease. There were, however, many exceptions to the statement. A larger number of amputees would be necessary to establish the validity of these findings.

TABLE VII.

DURATION OF CLAUDICATION AT FOLLOW-UP

	No. of patients	*Average duration of claudication*
Onset before 50 years.....	31	10 years
Onset 50-59 years.....	35	5 years
Onset 60 and later.....	42	4 years

TABLE VI.

DURATION OF CLAUDICATION WHEN AMPUTATION WAS PERFORMED

Years of claudication	*0-1*	*1-2*	*2-3*	*3-4*	*4-5*	*5-6*	*6-7*	*7-8*	*8-10*	*10-15*	*15+*
Alive at start of year.....	108	107	102	95	77	61	48	36	26	19	5
Amputated during year.....	5	3	9	1	4	0	0	1	0	3	1
Percentages amputated during year.....	5	3	9	1	5	0	0	3	0	3	—

TABLE VIII.

MORTALITY IN RELATION TO AGE AT ONSET

	Annual mortality %
Onset before 50 years	2
Onset 50-59 years	6
Onset 60 and later	9

2. *Hypertension.*—The mortality was higher in hypertensive than normotensive patients, and this was so both in the group commencing claudication before 50 years of age and in the group commencing later (Table IX).

TABLE IX.

MORTALITY IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS

	Onset of claudication before 50			*Onset at 50 or after*		
	Alive	*Dead*		*Alive*	*Dead*	
		No.	*%*		*No.*	*%*
Normotensive	19	1	5	33	15	31
Hypertensive	7	4	36	17	12	41

We have seen that hypertension occurred in 15 of the 21 patients who died of cardiovascular disease but in only two of the 10 dying from other causes. Analysis of evidences of cardiovascular disease in patients during life shows the same increased incidence associated with hypertension (Table X).

TABLE X.

INCIDENCE OF CARDIOVASCULAR DISEASE IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS

	Hypertensives (40 cases)		*Normotensives (68 cases)*	
Cardiovascular disease	*No.*	*%*	*No.*	*%*
Angina pectoris	12	30	10	15
E.C.G. of infarction	7	18	4	6
History of stroke	3	8	1	1

Regarding the possible effect of hypertension on the peripheral vascular disease, we find no such deleterious influence. (a) The average age of onset of claudication was the same for hypertensive and normotensive patients, 55 years. (b) The average age at follow-up was the same: 61 years. (c) The incidence of amputation was lower in hypertensives than normotensives (Table XI). If, instead of counting patients, one counts individual legs, the difference is more striking (Table XII).

3. *Unilateral or bilateral claudication.*—Intermittent claudication rarely begins in both legs at the same time; usually one leg alone is affected but, if the patient lives long enough, the other more often than not becomes affected. The differences between those patients with unilateral claudication at the time of follow-up and those with bilateral pain are quite definite. Of course, labelling a patient as having unilateral claudication is open to two possible errors. First: walking, if sufficiently prolonged, might produce bilateral pain but fails to do so because pain beginning in one leg forces the subject to halt before the other leg hurts. Second: a patient who has had unilateral claudication and then has the leg amputated may be unable to walk far enough to experience pain in the other leg at some future time.

TABLE XI.

INCIDENCE OF AMPUTATION IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS

Total number of normotensive patients	68	
Normotensives with amputations	19	(28%)
Total number of hypertensive patients	40	
Hypertensives with amputations	8	(20%)

TABLE XII.

NUMBER OF LEGS AMPUTATED IN HYPERTENSIVE AND NORMOTENSIVE PATIENTS

Normotensive patients:		
Total number of legs with claudication	113	
Number of these legs amputated	28	(25%)
Hypertensive patients:		
Total number of legs with claudication	75	
Number of these legs amputated	8	(12%)

As shown in Table XIII, patients with unilateral claudication at the time of follow-up were: (a) older, on the average, when their claudication began; (b) suffering from claudication for the same average duration as those with bilateral claudication; (c) manifesting less evidence of diffuse vascular disease, for they had less hypertension, angina, myocardial and

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TABLE XIII.

CONTRAST BETWEEN PATIENTS WITH UNILATERAL AND BILATERAL CLAUDICATION

Summary of findings	*Unilateral claudication*		*Bilateral claudication*	
	No.	*%*	*No.*	*%*
Total number of cases....	27*		80*	
Average age at onset of claudication.....	58 years		54 years	
Average age at time of follow-up study.....	64 years		60 years	
Dead at time of follow-up study.....	6	22	26	33
Hypertension.....	4	15	35	44
Angina pectoris.....	3	11	18	23
E.C.G. of infarction.....	1	4	10	13
Past history of stroke....	0	0	4	5
Amputations.....	9	33	18	23
Number of limbs with claudication.....	27		160	
Number of limbs amputated.....	9	33	27	17

*One patient omitted because leg had been amputated after injury in youth.

cerebral infarction. Probably as a result, proportionately fewer patients with unilateral claudication were dead. And yet the peripheral vascular disease was more serious in the limbs of those with unilateral claudication, for almost twice the proportion of limbs had to be amputated as in the bilateral group.

SYMPATHECTOMY

There were not enough patients of similar age and severity of vascular disease to assess the effects of sympathectomy. Many patients who had had a sympathectomy said their walking distance had not improved after the operation, but some felt the operation had helped them to walk further. The important question whether sympathectomy prevents gangrene could not be answered by this study.

DISCUSSION

Hypertension apparently had no harmful effect on the lesion causing claudication, judging from the following observations. The incidence of ischæmic complications requiring amputation was lower in hypertensive than in normotensive legs (Tables XI and XII). The average age of onset and the duration of intermittent claudication were the same as for normotensive patients. On the other hand, evidences of widespread atherosclerosis were commoner in the hypertensive group. Proportionately more of these patients had bilateral intermittent claudication and thromboses of cerebral and coronary arteries (Tables X and XIII). The increased frequency of occlusion of cerebral and coronary arteries resulted in a higher mortality rate in the hypertensive group (Table IX).

The fact that amputation was more frequent in the first few years of claudication (Table VI) deserves comment. Roughly speaking, the condition of the affected limbs followed one of three courses. In the most favourable group the collateral channels remained adequate for a considerable number of years and, in fact, a few patients said that their walking distance increased as time went on. In other patients the collateral circulation gradually became less and less adequate, the walking distance decreased and sometimes amputation had to be done years after the onset of symptoms. In the third group thrombosis was so extensive, or so progressive, that gangrene was likely to occur within a few years of the onset of claudication, particularly if the patient neglected proper foot care.

The lesion responsible for intermittent claudication rarely kills the patient. Only one of the 32 patients who died died from a cause which might have been directly related to the lesion causing claudication. That patient, who had had intermittent claudication for over five years, died a few days after an occlusion of the abdominal aorta.

CONCLUSIONS

In this series of 108 patients with intermittent claudication the chief findings regarding prognosis were as follows:

1. The three-year mortality rate was 13%, the five-year rate approximately 25%.
2. Patients in whom the disease commenced early in life lived longer, on the average, than patients with a later onset of claudication.
3. Normotensive patients had a better prognosis regarding life than hypertensives.
4. The group with unilateral claudication had a somewhat lower mortality rate than the group with bilateral pain.
5. Manifestations of cardiovascular disease were common in patients during their lifetime and atherosclerosis played a striking role in causing death. Hypertensive patients had a higher incidence of cardiovascular disease than normotensive patients.
6. About one-quarter of the group had had amputations. The first amputation had usually

been done within five years of the onset of claudication. Amputation was commoner in unilateral than in bilateral cases but less common in those with hypertension than in those with normal blood pressure.

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RÉSUMÉ

Dans une série de 108 malades souffrant de claudication intermittente, les principales données pronostiques furent les suivantes: une mortalité de 13% dans une période de 3 ans et de 25% dans une période de 5 ans. Les malades chez qui l'affection avait débuté tôt dans la vie eurent une meilleure moyenne de survie que ceux qui en souffrirent sur le tard. Les hypertendus eurent un moins bon pronostic que ceux dont la tension était normale. Le groupe de ceux chez qui l'affection n'intéressait qu'un membre à la fois exhibèrent un taux de mortalité plus bas que celui du groupe caractérisé par des douleurs bilatérales. Un grand nombre de malades montrèrent des troubles cardiovasculaires et l'athérome fut souvent la cause du décès. Ces troubles furent plus prononcés chez les hypertendus que chez les autres. Un quart de ces malades avaient déjà subi une ou plusieurs amputations, la première intervention ayant habituellement été pratiquée dans les 5 ans qui suivirent les débuts de la claudication. L'amputation fut plus fréquente dans le groupe ayant des symptômes unilatéraux que chez les autres, et moins fréquente chez les hypertendus que chez les sujets à tension artérielle normale. M.R.D.

GASTROSCOPIC STUDIES IN ROSACEA*

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IT HAS BEEN our contention that rosacea is part of a general vascular disturbance, with the presenting signs on the face. In the belief that the gastric mucosal vessels may also be involved, we reported in 1941[1] gastroscopic visualization in a series of 19 patients with rosacea. We found in 18 definite signs of change ranging from a superficial to a hypertrophic to an atrophic gastritis. These findings were independent of the presence or absence of digestive symptoms or of the hydrochloric acid content in the gastric secretion. By contrast only 4 out of 15 control patients had these changes. These findings were confirmed by Conrad, Kenamore, and Lonergan,[2] who noted evidence of gastritis in 11 of a series of 12 patients with rosacea.

The present follow-up study was conducted on a further group of cases of rosacea to determine whether there was a change in the appearance of the gastric mucosa while the condition was in remission.

All patients were prepared in the same manner, as out-patients. All had fasted from midnight and received premedication intramuscularly with sodium phenobarbital 3 gr., demerol 100 mg., and atropine 1/100 gr. Surface anæsthesia of mouth and pharynx was accomplished with 2% Pontocaine. All gastroscopic examinations were carried out by one of us (G.Y.).

The changes in the mucosa were noted as normal or as superficial, atrophic or hypertrophic gastritis.

Superficial Gastritis is a term used to describe visible changes of a superficial nature not present in the normal stomach. These changes can be mild or severe or they may occur in varying intermediate stages. The changes are measured by the variation from normal in the visible state of the mucosa, its blood supply and secretions, and the state of stomach dynamics. These changes may be patchy in distribution, or generalized involving the entire mucosa. Hyperæmia, slight mucosal swelling causing mild increase in the size of the rugal folds, scattered petechial hæmorrhages, and occasional small superficial erosions with or without a small yellowish necrotic slough are the characteristic changes. There is sometimes a slight increase in the amount of visible mucus secretion. Peristalsis and antral activity may or may not be increased.

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The superficial gastritis was of a mild and patchy nature in all cases examined.

Atrophic Gastritis is a condition of the gastric mucous membrane in which regressive changes have taken place and in which colour, instead of being red, is pearl to pearl-grey. The thickness of the mucosa has disappeared and the underlying arborizations of veins shine through as purple cords covered by a thin translucent skin, which is all that remains of a normally salmon-pink mucous membrane. Peristalsis and tone are less, and the stomach is easier to distend with air. Chronic superficial gastritis may be followed to the stage of atrophy and signs of both processes often coexist. It may be well to consider the complex of chronic superficial-atrophic mucosal disease as one process.

The cases in our series were moderate in degree.

Hypertrophic Gastritis is characterized by hyperæmia, "cobblestoning", and at times mammillation of the mucous membrane. There is also hyperperistalsis and hypersecretion. This pattern may be generalized to involve the whole mucosa but is most often patchy. Areas of predilection are the angulus and adjacent anterior and posterior walls, and the greater curvature and posterior wall area of the body and fundus. Scattered erosions and excessive mucous secretion are usual accompanying characteristics but are not necessarily present. Again, these changes may be mild or severe, localized or generalized. The degree of the process has been mild in our cases.

CASE 1.—Mrs. K. suffered from a mild rosacea of the erythematous type. She had no gastrointestinal symptoms but did have achlorhydria after histamine. Gastroscopy revealed an atrophic gastric mucosa. After the institution of a bland dietary regimen and the use of a mild sulphur lotion locally to the face, there was complete clearing of the rosacea. At this time, three months after institution of therapy, the repeat gastroscopic examination revealed a completely normal mucosa.

CASE 2.—Mrs. T. suffered from moderately severe rosacea with erythema, telangiectasis and papulation. Her barium x-ray series revealed abnormal findings and HCl was present in the gastric secretion. There were moderate digestive symptoms. Gastroscopy revealed a superficial gastritis. Three months later the rosacea was in remission and the mucosa normal.

CASE 3.—Mrs. G. had a mild rosacea and digestive symptoms. Barium x-ray examination was negative. Gastroscopy revealed a mild superficial gastritis with patchy hypertrophic changes. Three months later the face and gastric mucosa were normal.

An additional four patients were examined by gastroscopy while the rosacea was active. All of these had gastritis, varying from the superficial type in two to the hypertrophic in one and the atrophic in one. No examination during remission was possible.

The ages of these patients varied from the 20's to the 50's. No attention was paid to the general health and no attempt was made to determine the presence or absence of any emotional disturbance.

All patients were placed on the same treatment regimen of lotio alba locally, HCl by mouth and a bland diet. Alcohol, coffee, tea, spices, cola drinks and fried foods were prohibited.

COMMENT

Rosacea is a chronic affection of the flush areas of the face. It is characterized primarily by transient erythema or flushing with rapidly developing permanent vascular dilatation, papulation and papulo-pustulation. Rarely, rhinophyma with gross sebaceous overactivity and bulbous increase in the size of the nose will develop. At times the eye may be involved and conjunctivitis, keratitis and, rarely, actual corneal ulceration with loss of vision may develop.

The fundamental abnormality in rosacea is a vasodilatation in the central part of the face due to dilatation of the most superficial vessels, the non-muscular endothelial capillaries and venules. It is questionable whether the arterioles play a part. By skin temperature experiments, Borrie[3] could find no evidence of their involvement.

Various writers have described the association of rosacea with various internal and external disturbances. Those most commonly implicated have been pelvic disorders, foci of infection, emotional disturbances, seborrhœa, local infection, gastrointestinal disturbances with dietary indiscretions and exposure to the elements. Sobye[4] recently reviewed the subject and in his large series of 128 patients found no clinical association between rosacea and the above disturbances. He attributed it to a deficient development of facial muscles with an inferiority of the facial vessels. He concluded that the prolonged influence of climatic agents on facial skin resulted in injury to vessels with œdema in those with deficient development of facial muscles or inferiority of facial vessels. He reported excellent results by means of massage. Klaber and Wittkower,[5] on the other hand, believed it to be an angioneurosis. They postulated that the superficial vessels lost their

contractile power because of the patient's lack of mental balance.

It is our belief that the abovementioned factors may all play a part in the causation of this disease. They are the trigger mechanism which sets off the spark. We have attempted to demonstrate that, whatever this trigger mechanism may be in an individual case, involvement of the face is only one part of a much wider picture.

SUMMARY

Further gastroscopic studies have been carried out on eight patients with rosacea. All revealed evidence of gastritis, paralleling the results reported in our earlier work. In four of these patients, studies were carried out both during activity and in remission. Before institution of therapy gastroscopic evidence of gastritis was consistently found. During remission a normal gastric mucosa was observed.

We believe that the above findings substantiate our belief that rosacea is a general vascular disturbance with presenting signs on the face.

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SOME OBSERVATIONS ON THE VISUAL RESULTS OF CATARACT EXTRACTIONS*

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CATARACTS have been recognized for 2,000 years but only our generation can say of uncomplicated cataracts, "The blind receive their sight."

Cataracts manifest themselves chiefly by loss of vision, and the success of treatment must be gauged largely by the degree to which sight is restored. I wish to discuss the visual results of the surgical treatment of cataracts.

Although Daviel described cataract extraction in 1752, it was 100 years before it was wholly accepted. This delay in acceptance can be understood because his method involved snipping the cornea with scissors without an anæsthetic, and with no attempt at asepsis. Both surgeon and patient must have been cast in heroic mould.

It was not until the beginning of this century that accurate statistics of postoperative visual acuity began to appear in the literature. Two representative examples of early reports on the extracapsular extractions are those of Rollet and Parker. In 1910 Rollet[1] reported on 1,673 extractions, 43% of which were successful. In 1921 Parker[2] published a report of 1,013 combined extracapsular operations and of these 33% were successful. By success is meant a postoperative corrected visual acuity of 6/9 or 20/30 or better.

Forty per cent success was common at this period. Unfortunately, statistics of postoperative complications and of associated diseases which affect the postoperative vision were seldom recorded.

INTRACAPSULAR EXTRACTION

The next step forward was the intracapsular extraction. In 1903 Smith[3] reported to a sceptical ophthalmological audience 6,500 intracapsular extractions performed in India. Unfortunately, he gave no visual results; his method was distrusted and his claims were doubted.

Two or three decades were to pass before Knapp[4] and others won grudging recognition of the value of the intracapsular extraction. But by 1936 Knapp was obtaining 20/30 vision in 90% of his cases. Thus during the period between the two World Wars the visual results of cataract extraction had improved from about 40% to 90% success.

Since acceptance of the intracapsular extraction, attention has been directed mainly to two other problems in the hope of increasing the percentage of success. These problems are, firstly, how to make the incision and, secondly, how to close it.

I. THE INCISION

In England the majority of operators still use a cataract knife. In Canada and the U.S.A. most

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ophthalmologists use a keratome and scissors. There is some difference of opinion as to which is the better method.[5]

Davis[6] and Randolph and Eareckson[7] have published comparative studies of the two methods. In each of these studies, however, the operations were performed by different surgeons. Variations in skill were therefore likely to influence the results.

I have recently completed a series of 180 consecutive extractions in an attempt to determine the better method of making the incision.[8]

In order to reduce variable factors to a minimum the following measures were adopted:

1. Each method of making the incision was used alternately.

2. No sutures of any kind were used for the first 78 cases.

3. Conjunctival sutures only were used in the last 102 cases.

4. A full iridectomy was performed in all cases.

Most will agree that accurate corneoscleral suturing may save a bad incision, and that a good incision may be ruined by bad suturing. Since the whole aim of the series was to determine the better method of incision, no corneoscleral sutures were used in any case.

Intracapsular extraction was attempted in all cases except those cases in which the lens was thought to be hard and mature and unlikely to mould. In these mature cases the anterior capsule was removed with capsulectomy forceps and extracapsular extraction was performed.

In 90 cases the incision was made with the cataract knife and in 90 the keratome was used. The postoperative visual results and complications were recorded and compared.

In 12 patients the postoperative visual acuity was not determined for various reasons and 43 had associated diseases such as myopic degeneration, macular degeneration and corneal lesions. The first table gives a comparison of visual results, with these cases excluded.

TABLE I.

COMPARISON OF KERATOME AND KNIFE CASES OBTAINING 6/6 OR 6/9 VISION

	Number of cases	*VA of 6/6 or 6/9*	*Percentage success*
Keratome and scissors	64	58	91
Knife	61	58	95

As can be seen from Table I, 91% of the patients operated on by keratome and 95% of those operated on by knife saw 6/9. The difference is not significant.

Twenty-seven patients had a cataract removed from both eyes. The results are given in Table II.

TABLE II

Visual acuity	*Keratome*	*Knife*
6/6	*10*	*8*
6/9	*12*	*16*
6/12	*1*	*2*
6/18	*4*	*0*
6/24	*0*	*1*

Of these, 22 patients operated on by keratome and 24 by knife saw 6/9 or better. Five patients failed to reach this standard, but two of these had macular degeneration and two had diabetic retinopathy. The fifth patient was recorded as seeing 6/12 three weeks after the second extraction but she died before final refraction.

These results show that visually neither method is superior to the other.

TABLE III.

INDICATIONS OF DEFECTIVE WOUND HEALING.

	Keratome	*Knife*
Average cylinder of cases of 4D and less	1.93	2.13
Number of cases above 4D astigmatism	4	12
Delayed anterior chamber formation	5	1
Choroidal detachment	8	3
Gaping wound at seventh postoperative day	2	3
Filtering scar	1	2
Adhesions of iris to wound	6	7
Iris prolapse	1	1

Table III lists complications and findings indicative of the relative merits of each type of incision from the point of view of wound healing. Astigmatism was higher after cataract knife incision. This was probably due to the conjunctival flap being made on cutting out with the knife so that it covered the incision only from about 2 o'clock to 10 o'clock. The flap was prepared before making the keratome incision so that it covered the whole length of the incision.

Delayed anterior chamber formation was more common in the keratome group. The other complications such as choroidal detachments, gaping of wound, filtering scar, adhesion of iris to the wound with slight elevation of the pupil, and

iris prolapse occurred about equally in the two groups.

The incidence of bleeding into the anterior chamber was unusually high. It occurred in 33 keratome cases and 25 knife cases. An increased incidence of hæmorrhage in keratome cases has been reported by Davis and by Randolph and Eareckson. This high hyphæma rate appeared to have no effect upon the final visual acuity, but it did increase the period of hospitalization.

I concluded that there was no significant difference in the results of the two groups and that choice of either knife or keratome was entirely a question of personal preference and skill.

II. Closure of the Incision

During the last decade there has been an increasing tendency to use two or three corneoscleral sutures. But methods of inserting the sutures vary in detail and many articles have appeared on this subject.

A typical report from the literature is that of Hughes and Owens,[9] summarized in Table IV.

TABLE IV.

Those Obtaining 20/30 Vision or Better (Hughes and Owens, 1945)

Combined extracapsular, no sutures	65.4%
Combined extracapsular, conjunctival sutures	76.2%
Combined intracapsular, conjunctival sutures	79.0%
Combined intracapsular, corneoscleral sutures	85.7%
Round pupil-intracapsular, corneoscleral sutures	91.7%

The Wilmer Institute opened in 1925, and in 1945 Hughes and Owens reported on 2,086 extractions performed during this period. The steady improvement in postoperative visual acuity is significant.

Unfortunately those cases in which the capsules ruptured are excluded from the calculations, and this must be borne in mind when assessing these figures. Those cases with associated disease were of course excluded.

It appears that the consensus at the present time favours round pupil intracapsular extraction with two or three corneoscleral sutures.

The results of the modern cataract operation are good. Table V gives a few examples of the visual results taken from some recent papers. These show that if the eyes are otherwise healthy a successful result should be obtained in at least 9 out of 10 patients.

At the present time much experimentation is being done to determine whether to use two, three or four corneoscleral sutures, whether they should be preplaced or postplaced, and whether they should be of chromic catgut or silk.

A study of the papers from which these figures were taken suggests that small variations in technique do not materially influence the visual results. The individual surgeon may improve his skill but, in the hands of fallible human beings, the standard techniques of cataract extraction cannot offer much greater success than that indicated in Table V.

TABLE V.

Visual Results of Modern Cataract Surgery

		Postoperative vision 6/9 or better
1945	Hughes and Owens[9]	91.7%
1947	Knapp[10]	90.0%
1950	Kirby[11]	98.0%
1953	De Roetth[12]	89.7%
1953	Randolph and Eareckson[7]	88.0%
1955	Reed[8]	93.0%

Our present operation may restore sight to more than 90% of sufferers but the enlarged retinal image and restricted field are severe handicaps. These are both overcome by Ridley's[13] recent introduction of the intraocular acrylic lens to replace the cataractous lens. This suggestion is as original as was that of Daviel. It has opened a new avenue for investigation. Professor Bietti[14] of Italy has already devised an acrylic lens which is placed in the anterior chamber in front of the pupil.

It would be presumptuous of me to discuss these methods further. Time may show that they offer 6/9 vision with a full field and a normal image to 90% of cataract patients. If this comes to pass, the next generation of ophthalmologists will say Daviel taught us to take out the opaque lens, but it was Ridley who taught us to put back a clear one.

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REHABILITATION FOLLOWING POLIOMYELITIS:

II. PERSONALITY CHANGES AND READJUSTMENTS

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THE REHABILITATION of a patient who has had a residual paralysis following poliomyelitis is a problem involving not only the selection of a physically suitable occupation but the psychodynamics of the individual and the dynamics of the culture.[1] The clinical history of a patient who is undergoing successful rehabilitation after acute poliomyelitis was summarized in an earlier paper[2] which reported a study of factors involved in an increase of symptoms after he returned to his regular duty in one of the armed services. The psychological and the psychosocial results of the physical changes following poliomyelitis are reviewed in this report. These will be described as if occurring in discrete steps, although each step was an integral part of a constantly interacting continuum.

During the acute phase of the illness much of the patient's interest, attention and other forms of psychic energy which had previously been invested in environmental objects was withdrawn and reinvested in his body. When he recovered from the acute symptoms, the psychic energy was gradually returned to the environment although the same amounts were not always invested in the same objects.

The residual symptoms of the poliomyelitis included a complete paralysis of the thenar muscles of one hand and a partial paralysis of the muscles of the ipsilateral forearm and the contralateral lower leg. The patient was often aware of an ache in the hand and forearm.

A primary problem, the solution to which had to be under way before rehabilitation could properly begin, centred about the tri-dimensional conception which he had of his own body and which Schilder called the "body image".[3] The body image of the patient had been developed as a compromise between perceptions from sensations having their origin in somatic structures and standards of such characteristics as health, strength, grace and behaviour which were approved by the patient and by most persons in his society. The patient biased the interpretation of his sensory phenomena so that his perceptions of these characteristics, as they were possessed by him, approximated his ideals more closely than they would have otherwise. For example, the patient was not much stronger than the average man when judged by ordinary manifestations of physical strength and he placed a relatively low value on strength as judged by such manifestations. His ability and willingness to tolerate gruelling hours of labour had been much greater than that of the average man and he gave a high valency to this aspect of strength.

The pride which the patient had taken in his stamina increased the frustration inherent in both his general weakness and his specific paralyses. The stream of sensations indicating weakness and awkwardness constituted a demand that he change his mental representation of himself to conform with reality. Because this threat to his body image was loaded with depression and anxiety, the patient rejected the reality of the sensory phenomena demanding the change.

The rejection of phenomena representing somatic characteristics radiated to other sensory phenomena. By the fifth month after the onset of the poliomyelitis, the entire waking life of the patient was associated with feelings of unreality. During the first year after the onset of the illness the patient worked with determination, although frequently it was a matter of driving himself when he could hardly give any attention to what he was doing because of fatigue and distress. He was motivated by his sense of duty to his family, his fear that he would not be able to make a living at any other kind of work, and his own ambition.

The feelings of unreality slowly decreased until by the 13th month he was able to accept his sensory report of somatic disability as valid, most of the time. By the 14th month the feelings of unreality occurred only with extreme fatigue and when he visually reinforced his impression that the long-established body image was no longer tenable by looking at his affected hand. Feelings of unreality associated with looking at the disabled hand ceased during the 17th month. It was not until the 18th month that the patient relinquished his attempt to regain his former hardiness by physical activity.

The patient helped himself to accept the somatic changes as real by telling himself that

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they were only temporary. He retained the memory of his previous activity as a minimum ideal towards which he should strive. The failure to achieve adequate strength for such activity was a continual course of considerable guilt. During the 19th month the patient first began to accept the possibility that he might never regain his former strength and stamina. After the 22nd month, vague feelings of unreality continued during occasional severe exacerbations of symptoms.

When the patient began to accept the reality of his handicap, he began to accept the cultural estimate of the deformity and the associated implications of inferiority. He became more clearly aware of the inadequacy, the insecurity and the dependence of his position. He was considered to be average in his work but the patient himself was not satisfied.

He was aware that his interest in the home and associated social life was less than it had been before the illness. He appreciated this unwillingly both because it was not becoming to his status as a husband and a father and because it made him feel guilty, as if he were not properly grateful to his wife for her behaviour during his illness and his prolonged convalescence. Early in the day he would frequently look forward to an evening with his family or his friends. By evening his available energy would be so exhausted that he would have little interest in any kind of social activities.

Among the patient's peers there was a generally accepted belief that anyone who was out of hospital for a few weeks, at the most, should be completely recovered. A patient who was sick for a few days or for a few weeks was placed in a position having both advantages and disadvantages. The sick person could expect to have his material needs cared for. There would be no demand on him save the activities or the lack of activities which were currently thought to assist him in recovering from his illness. During the acute stages of his illness he was occasionally given a position of special authority and privilege so that he could make unusual demands. Among the disadvantages of his position was the limitation of his movements to those which were felt to aid in his recovery or at least not to impede it.

The patient's social group, in common with many English-speaking groups, gives few advantages to the individual with a chronic illness and penalizes him by considering him to be of inferior status.[4] The inferior status is greater with a more obvious deformity. The loss of prestige with the physical handicap is related to the interference of the handicap with a potential contribution to society.

The attitudes which are sometimes said to be traditional in occidental society towards its crippled members were not discovered in the service milieu. These attitudes imply that a crooked body means that the mind is crooked, that sickness is a punishment for sin and that pain is the path of virtue. The observed attitude towards physically handicapped persons was one of curiosity, associated with judgments implying an inferiority which varied directly with the severity of the defect. Individuals closely associated with the patient experienced, on top of the judgments of inferiority, feelings of pity.

The individual members of society, in addition to changing their attitudes towards the patient in keeping with his changed physical status, had not been static in the evolution of their own personalities.[5] This evolution, occurring during the time when the patient had been sick, further complicated the situation to which it was necessary for him to adjust. The complications presented greater problems where the persons concerned were more closely attached emotionally to the patient. If he had been frequently associating with these people, there would have been a constant interworking of personalities so that no great step would remain to be taken at any time by either party. During the first year after poliomyelitis developed the patient was either in hospital or carrying on with great difficulty. The problems involved in meeting a minimum of the demands on him were so great that he had little opportunity to adjust to, or little energy available for an attempt at influencing, his immediate human environment.

Before the patient became ill his wife had been an immature and insecure girl but she successfully met the responsibilities thrust on her during his illness and, in meeting them, developed self-confidence and self-esteem. Until the development of the poliomyelitis the wife had deferred routinely to the opinions of her husband or to those of her mother. By the second year after the onset of the illness she might defer to the opinions of her mother on occasion but her own opinions were secure over a wide range. She disparaged opinions expressed by the patient if they were at variance with her own. On oc-

casion she might ask the opinion of her mother but no longer of her husband. She seemed to take some understandable pride in demonstrating her newly achieved position.

As a representative agent of her society and as a result of the standards of that society which she had assimilated, this young woman had made a number of decisions about her husband which she did not hesitate to express. She had no sympathy to waste on him; he had been away from home with nothing to do and with people making a fuss over him while she had been in the home, lonely and burdened with responsibility. After all, he had had the "polio" and he was over it. He should stop letting it bother him. He was worrying too much about having had this illness and had developed a mental quirk about it. He was babying himself and pitying himself. He was lazy and he gave up too easily. She resented his loss of interest in the home and in their friends; after all, he might think of her.

Any time that the patient was at home, during the first 12 months after he had developed poliomyelitis, he had neither the energy nor the sense of personal security which would have allowed him to be of material assistance to his wife in managing the home. Neither were these great enough to make the patient able to prevent his wife from changing the dominance of their respective positions. During this time he was perplexed and defeated. He had little confidence in himself and only enough energy to carry on effortfully in the simplest fashion he could contrive. During this period he came to accept the opinions which his wife repeatedly expressed about him as if they were his own, although with some doubts. These introjected opinions were a further source of guilt.

Later, when the patient became more energetic and more secure, any action which he might have taken to counter the changed status of his wife was made difficult by the debt of gratitude which society acknowledged that he owed her. This rendered unlikely any effectual rebellion against the changed roles which by this time had become a firmly established pattern. Judged by the culture of the social group, the behaviour of the wife during the year after her husband developed poliomyelitis was admirable and such that the husband should feel deeply grateful.

The patient was recognized, as indeed he recognized himself, as a person who was not quite a full member of society on account of his hand. He could not take the active part socially which he had taken before his illness, and economically the number of occupations open to men with paralyzed hands is limited. He had ceased being an able-bodied man and had become a man with a constantly visible and obvious handicap. In addition, his fellow workers felt that he did not carry the full measure of responsibility and activity which was expected of an able-bodied man. The patient had fitted into the stratum of the handicapped. The attitudes of the people about him and their behaviour toward him were coloured by their attitudes towards and their opinions concerning handicapped men as a group. The attitude toward the patient as one of a group was superimposed on the opinions and attitudes toward the patient which the persons closest to him had held previously. The opinions and attitudes toward the patient as one of the group of the handicapped entirely displaced any more personal opinions held by casual acquaintances.

Confronted with the challenge of an altered social status as well as somatic changes, the patient reacted by a reassessment of himself and the altering of his goals. He allowed interests which had been important, to become of little value. Intense spontaneous interest developed where there had been little before. Some of the motives which gave rise to these alterations were consciously aimed at establishing a satisfactory status for himself, but others were not conscious and the patient experienced them as inexplicable.

Until the 15th month the standards by which the patient judged an individual, whether himself or anyone else, showed little departure from those generally accepted. Between the 15th and the 18th month he began to feel that in spite of his handicap he had as great a value and as great a potential as any other man. He was improving and felt that he would continue to improve, and he was demonstrating in his day-to-day work that he could fill a man's place even if it were not quite the place which he had filled before his illness. This reassessment of himself was late in beginning and progressed slowly. It was difficult as it necessitated acceptance of a new standard of achievement in his occupational life, and a new standard of activity in his social life, and in spite of these that he feel valuable to himself and to others.

It was necessary for the patient to set new goals of participation in almost every aspect of

his existence. A single attempt almost a year after the onset of the original illness convinced him that for a long time he could not seriously entertain ideas of competitive participation in athletics. His low estimate of his own ability and his attitude regarding economic responsibility for his family resulted in his work being neglected less than either his family or his social activities. For almost two years he laboured under the misapprehension that he was in danger of being discharged from the services because of his physical handicap. He believed that as an untrained man with a physical handicap he would have difficulty earning enough to support his family. As he sincerely loved his family, he felt that he could make amends, when he was feeling stronger, for any temporary neglect, especially when the neglect was in the interests of their immediate and their future welfare. As a result of these attitudes he gave his occupation the first consideration where the expenditure of time and effort was concerned. He was able to keep up an average standard of work but in his social life he was forced to take a much less active part than he would consider acceptable when he was feeling better. If his ankle and arm were aching when he arrived home from work, he left to his wife jobs about the home which she felt should be done, such as clipping and mowing. Previously, he would have been ashamed if his wife had been doing such things when he was in the home. By the 17th month he had learned to neglect the tasks of the home with no internal turmoil if he thought that carrying them out would result in such fatigue that he would have pains and aches for several days. He accepted this as a temporary standard of participation, telling himself that it would be only a matter of time until he would be stronger and able to do heavier work.

While the patient was in hospital his major interests were in himself and in what was going on about him in the ward. He discovered the discrepancies between the activities in which he wished to take part and those in which he could take part during the first month out of hospital. His attempts to participate in activities in which he had been interested before the illness met with repeated defeat because of his limited physical ability. At this time he began to ruminate over questions which, if they had occurred to him at all, had been previously of only casual interest. In hospital he had had no interest in any kind of reading but, defeated and perplexed, he turned to reading in an effort to satisfy his curiosity about poliomyelitis and to find answers for the troublesome questions. Why did this thing happen to him? Why should he suffer as he was suffering? What was the use of tolerating pain and fatigue? What was the use of living, especially a life burdened with pain? His attitude suggested that if he knew the answers to these questions and if he knew about poliomyelitis he could, by some magic, exorcize the harm it had done.

In addition to the conscious wish to learn there was an unconscious motivation. It produced a spontaneous interest in anything relating to poliomyelitis or to questions relating to his being and his suffering. He found himself fascinated by conversation, radio programs, television and literature dealing with these problems. His interests spread from poliomyelitis to other medical fields and from the particular questions which puzzled him into a restless search for knowledge. There was a clear parallel between his growing acceptance of his physical disabilities and his increased demand for satisfaction from intellectual pursuits.

The intellectual interests were not entirely new to the patient as he had read, casually and occasionally, literature which many men engaged in a similar type of work and in the same social group did not read at all. By the 19th month after the onset of his illness the patient had started to read a many-volumed encyclopædia in addition to more casual reading.

He could not understand his new interests. Because they seemed foreign to him he wondered if he were "going out of his mind". As he had been sick with poliomyelitis, he felt that it was probably reasonable for him to be interested in poliomyelitis but he felt that the transfer of his interests from athletics to literature was unreasonable. In his cultural stratum scholarly achievement might be rewarded with awe but athletic achievement was emulated. He had no conscious intention of developing new interests or using them, when they were developed, to regain the prestige which had been lost by the sequelæ of poliomyelitis.

When the patient failed to find satisfactory answers for the questions which plagued him, he turned to the religious faith in which he had been instructed as a child. He had fallen away from any religious practice as a result of indifference and not of conviction. In his renewed faith he found a needed source of courage and

in the techniques of theology a release from much of his guilt. A religious perspective took his illness from the realm of the useless and the accidental. The entire experience ceased being an example of the vagaries of an impersonal fate and became a lesson which left him better prepared for whatever might happen in the future.

The patient deliberately sought for ways in which he could improve his relations with other persons.[6] By the 18th month he was using, on occasion, jocular raillery to make social situations more cheerful. Although this behaviour had been a prominent aspect of his personality before he became sick, he discovered that afterwards it was difficult to initiate and required considerable energy to maintain. By the 23rd month he had stopped deliberate and conscious efforts aimed primarily at raising his prestige with his peers. He was accepting an attitude which he had found, rather than assumed. He felt that it was natural. It did not require as much energy as the gayer and socially more competitive personality which had existed before the illness and which he had attempted to re-establish afterwards. The personna was that of an older and somewhat grave man who, for example, considered questions, even those brought up in casual conversation, seriously, humanely, and honestly. It was in harmony with the scholarly and the religious interests which were developing. The patient rationalized his behaviour by considering that it was in keeping with his age as he was older than most of his co-workers.

DISCUSSION

The residual somatic lesions of acute anterior poliomyelitis could be expected to produce changes in the personality which would vary with both the personality that existed before the patient became ill and the severity of the resulting handicap.[7] The affected patient was a carrier of his culture, one who met the demands of his unconscious or vaguely felt feelings of what was right, as well as his conscious decisions of what was wise, by exemplifying the values and the virtues of the social system. He was aware that his paralysis and his general weakness made him different from other men. He knew that his able-bodied co-workers considered him inferior because of his physical disability and he resented their attitude.[8, 9] Because discrimination is at a minimum under service conditions, the patient's need to regain and surpass his former prestige was more important than resentment in determining his behaviour.

CONCLUSIONS

1. The man with a paralyzed limb resulting from acute anterior poliomyelitis meets an entirely new life situation not only with less adequate equipment but with a different disposition of psychic energy.

2. Factors facilitating rehabilitation are: (a) instinctual demands reasonably satisfied by a variety of interests with multiple-channelled motivations; (b) the ability to transfer an investment of psychic energy from an area where that investment has been large to one in which it has been small; (c) a demanding super-ego.

3. No superficial examination would reveal the intense emotional life that the patient was experiencing. This emphasized the necessity of the art of medicine in the successful treatment of diseases with primarily somatic manifestations as well as those in which the manifestations are primarily psychic. It is a striking example of how a rich and colorful motley may be hidden under the dull uniform of conventional behaviour imposed on modern man by his culture.

SUMMARY

A patient found difficulty in assessing realistically his somatic potentialities following acute anterior poliomyelitis. The altered status given the physically handicapped man by society complicated his readjustment. He lost interest in fields where he could no longer be active and interest increased where his handicap did not interfere. The patient was only aware of some of the motivations for this transposition. There was a further development of his personality in harmony with his somatic limitations and psychic alterations.

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ECHINOCOCCOSIS IN NORTH AMERICAN INDIANS AND ESKIMOS*

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HYDATID DISEASE, a form of helminthiasis, was described by Hippocrates, and now is known to be widely distributed throughout the world. It is prevalent in South America, Iceland, Australia, and New Zealand, and frequently encountered in the regions along the Mediterranean, and in Central Europe, Russia and South Africa. Native infection in the United States and Canada has been considered very rare. Recent observations indicating the presence of endemic echinococcosis in North America, and the increasing number of immigrants admitted to the United States and Canada from hydatid-infested countries, make imperative the recognition of the disease.

Osler in 1882[1] collected 61 cases occurring in Canada and the United States. Somner in 1895[2] increased the total number to 110.

Lyon in 1902[3] was able to present 135 new cases, all in natives of the United States and 2 in natives of Canada. Magath in 1921[4] summarized 334 cases. He added 4 more cases in the native-born to the previous observations. Phillips in 1930[5] reviewed 36 cases of pulmonary cyst published in the North American literature; only 2 of them occurred in natives. Magath in 1937[6] was able to find 31 cases of echinococcosis originating in natives of the United States and 4 in natives of Canada. Haight and Alexander in 1940[7] increased the total number of pulmonary hydatid cysts reported to 44 and added 2 of their own; only 5 of the patients were born in America and only 2 of them had never left the continent. In 1944 Davidson[8] reported 4 additional pulmonary hydatid cysts in natives, most likely contracted outside of the country. A complete review of the distribution of echinococcosis in North America was made by Magath in 1941[9] and in 1950.[10] By then 596 cases had been published, and 36 of them originated in natives of Canada and the United States. Since then 1 native case had been reported each from California,[11] Virginia,[12] Florida,[13] Mississippi,[14] four cases from Western United States,[15] 6 in Indians from Northern Manitoba[16] and 3 in Metis from Northern Alberta.[17] New York State registered 34 hydatid cases from 1947-52 without specifying the place of birth of the patients.[18] Rausch and Schiller in 1951[19] observed an unusual number of nodular livers and 2 surgically proved hydatid cysts in Alaska. Sweatman in 1952[20] reported 21 unpublished cases from Canada. Miller in 1953[21] increased this number to 3 Eskimos, 136 Indians and 2 white patients. This number likely included the previously published Canadian cases and Harrison's[22] 11 patients. The cases presented here include all the hydatid cysts originating from Alberta, the Yukon and Northwest Territories, some of them already reported in Sweatman's and Miller's publications.

MORPHOLOGY

The disease in man is produced by the larval form of the dog tapeworm, *Echinococcus granulosus*. The adult worm, 2.5-6 mm. long and 0.5 mm. broad, is composed of a head, neck and 2 segments or proglottides. The head has four suckers topped by a double row of from 28-50 hooklets. The terminal segment is gravid and contains several thousand eggs. The ova are globular, 30 microns in diameter. The adult worm lives parasitically in the digestive tract, mostly the terminal jejunum of the definitive host. The intermediate host becomes infested by ingesting the eggs fallen to the ground with the excreta of the definitive host.

The classical domestic life cycle of *Echinococcus granulosus* is between the dog and the sheep and cattle. The importance of a sylvatic life cycle as a reservoir for the infection was stressed by Magath.[23] He differentiated three variants. The typical one for Canada includes wolf-moose-wolf, with caribou and deer substituting for moose on occasions. The second variant occurs in certain states of the United States and involves on the one hand the fox and occasionally the dog and wolf and on the other hogs, sheep and cattle. The third life cycle is occurring in the St. Lawrence Island of Alaska, where foxes eat voles, the intermediate hosts to the disease. Rausch[24] found that the St. Lawrence cestodes may represent a separate species of *Echinococcus*.

The list of definitive hosts in Canada, besides the dog, include the wolf, the coyote, the fisher

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and the arctic fox. The intermediate hosts are moose, white-tailed deer, coast deer, reindeer, elk, wapiti, caribou and bison. The parasitic infection kept alive in wild animals will be mediated by dogs to humans, who act as aberrant hosts.

GEOGRAPHIC DISTRIBUTION AND INCIDENCE

The Foothills Region is a geographic unit made up of Alberta, the Yukon and Northwest Territories. The Indians of this region can be divided roughly into two groups. The plains natives are farmers and ranchers. Only rare isolated cases of hydatid cyst infestation have been discovered among them. The 7,000 Indians and Eskimos living above the 58th parallel are

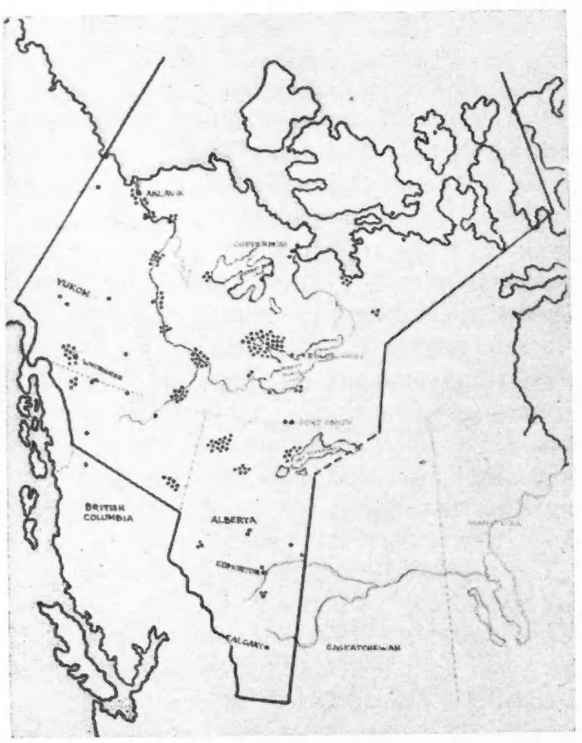

Fig. 1.—Map indicating the distribution of cases in the surveyed territories.

hunters and trappers who eat the products of their hunting and fishing, often without proper cooking. They live a nomadic life, closely associated with numerous dogs which are essential beasts of burden. The offal is fed raw to the dogs. This is a variant from the typical life cycle of the parasite, because the carnivore acquires the disease directly by being fed the viscera of the affected animals. The herbivorous game animals harbour the cyst most frequently in the lungs.

We have collected up to the present time 180 cases of hydatid cysts in the liver and/or the lungs, which represents a 2.7% incidence. The infestation can be assumed to be more prevalent on the basis of Miller's[21] survey in B.C. and N.W.T. In 1953 he obtained 15% positive and 12% doubtful reactions by performing the Casoni type of intradermal test with Australian antigen (sheep hydatid fluid). Wolfgang[25] in a different region, the Southern Yukon, tested 294 persons in the summer of 1954 with Aklavik-type antigen (reindeer hydatid fluid) and found 45% positive reactions, not counting 50 doubtful results.

MORBID ANATOMY

The human infestation is initiated by the ingestion of grass, vegetables or stagnant water where *Echinococcus* ova have been deposited. The parasites may also be directly acquired by close contact with affected dogs or pelts of wild animals. Once the ova are ingested by man, they lodge in the stomach and the gastric juice digests the external coat, thus freeing the embryo. These burrow through the gastric mucosa and enter the capillaries of the portal circulation and are carried to the liver. The majority are retained there but some of them reach the lungs. Once the embryo comes to rest, it grows to a vesicle and then into a hydatid cyst. A mature cyst is composed of an endocyst or germinal membrane and an ectocyst or laminated hyaline membrane. From the former wall, masses of cells which become vacuolated protrude into the vesicle's cavity and form scolices. These in turn vacuolate and develop into daughter cysts. The spilling of any part of the germinal layer or scolices may result in secondary *Echinococcus* cyst formation. The free scolices sink to the bottom of the hydatid fluid and form the hydatid sand. The cyst fluid is clear, limpid and alkaline, having a specific gravity of 1.008-1.015, and contains 0.6% NaCl. The finding of any component of the hydatid cyst is the only conclusive evidence of the disease. The host's reaction to the cyst is a non-specific foreign-body reaction, forming a pericystic layer or adventitia composed of polymorphonuclear, lymphocyte and plasma-cell infiltration and degenerated as well as normal cells of the affected organs. The continuous pressure of the cyst will produce necrosis of the neighbouring cells, with subsequent occurrence of second-

TABLE I.

DISTRIBUTION OF HEPATIC AND PULMONARY HYDATID CYSTS IN DIFFERENT COUNTRIES

Country	*Liver %*	*Lungs %*
Lebanon[26]	56.0	30.0
Turkey[27]	51.7	29.9
Greece[28]	....	30.0
South America[29]	70.0	15.0
Australia[30]	76.6	9.4
France[31]	75.0	8.5
United States and Canada[10]	72.0	9.0

ary fibrosis and hyaline degeneration. The pericyst formation is more intense in the lungs than in the liver.

The distribution of the cysts in the body varies from country to country (Table I). In the liver 85% of the cysts are in the right lobe,[32] and in the lungs the right to left ratio is 60 to 40.[30] Hydatid cysts may also be located in voluntary muscles, kidneys, spleen, heart, bones, brain, and spinal cord. They occur in these organs in about equal frequency and are the result of systemic spread of the ova.

The ultimate fate of the cysts is variable. If the growth becomes excessive, the danger of rupture is imminent. Liver cysts may rupture transdiaphragmatically into the pleural space, bronchi, bile ducts or the free abdominal cavity. The rupture of large pulmonary cysts is the rule, with emptying of the cyst content into the bronchi or pleural space. Apical, parabronchial cysts are most likely to end in early rupture. If all the contents are eliminated, spontaneous cure may result. This is considered to occur in 60-90% of the cases.[30, 31, 33-36] The cyst content may also become infected or hæmorrhagic, which will kill the living parasite in the liver. Secondary calcification follows.

TABLE II.

AGE DISTRIBUTION OF CYSTS IN LIVER AND LUNGS

Age	*Liver*	*Lungs*	*Total*
Under 25	1	63	64
25-50	16	35	51
Over 50	54	11	65
Total	71	109	180

In our series of 180 cases, liver cysts were found in 71 patients and lung cysts in 109. The sex incidence was not unusual; 93 were in females and 87 in males. Table II shows the age distribution and indicates that lung cysts were found mainly in children and young adults, while liver cysts were seen in older persons. Of the pulmonary cysts 27 were found in children under 10 years of age; the youngest child was 3 years old. The relatively small number of pulmonary hydatid cysts in older persons suggests that most of the cysts terminate in spontaneous cure by rupture into a bronchus.

The cysts were found almost equally in the two lungs, 56 in the right and 53 in the left. Analysis of the position of cysts in the hospitalized group reveals a marked tendency to posterior location. On the right four were in the posterior apical segment and 9 in the posterior basilar segment, the remaining four being in the anterior apical, middle lobe, medial basilar and dorsal segments. On the left side three were in the posterior apical segment, three were in the dorsal segment of the lower lobe, and the other six were scattered in the posterior basilar, anterior apical, pectoral and lateral basilar segments.

No cysts were found outside the liver and lungs in our experience.

CLINICAL SIGNS

The infection is most frequently acquired in childhood but the clinical manifestations appear only later in life when the slowly growing cyst makes itself evident by pressure on some important structure or by some complication. The uncomplicated hydatid infection is a silent condition. The symptoms of pulmonary cysts are variable and include cough, slight hæmoptysis due to bronchial irritation and vascular congestion. Pain is exceptional, unless the cyst is in contact with pleura.[37] Cardiac displacement, even with large cysts, is unusual. Large masses in the liver may produce pain by pressure or perihepatitis, or colic from extrinsic compression of the bile ducts. The possible ways for liver cyst to rupture were outlined in the section on morbid anatomy, and the symptoms are self-evident. The pressure erosion of bronchi by pulmonary cysts may result "in cure or morbidity or disaster".[38] Susman states that spontaneous rupture has a mortality rate of 1-2% by asphyxia from drowning by the hydatid fluid or impaction

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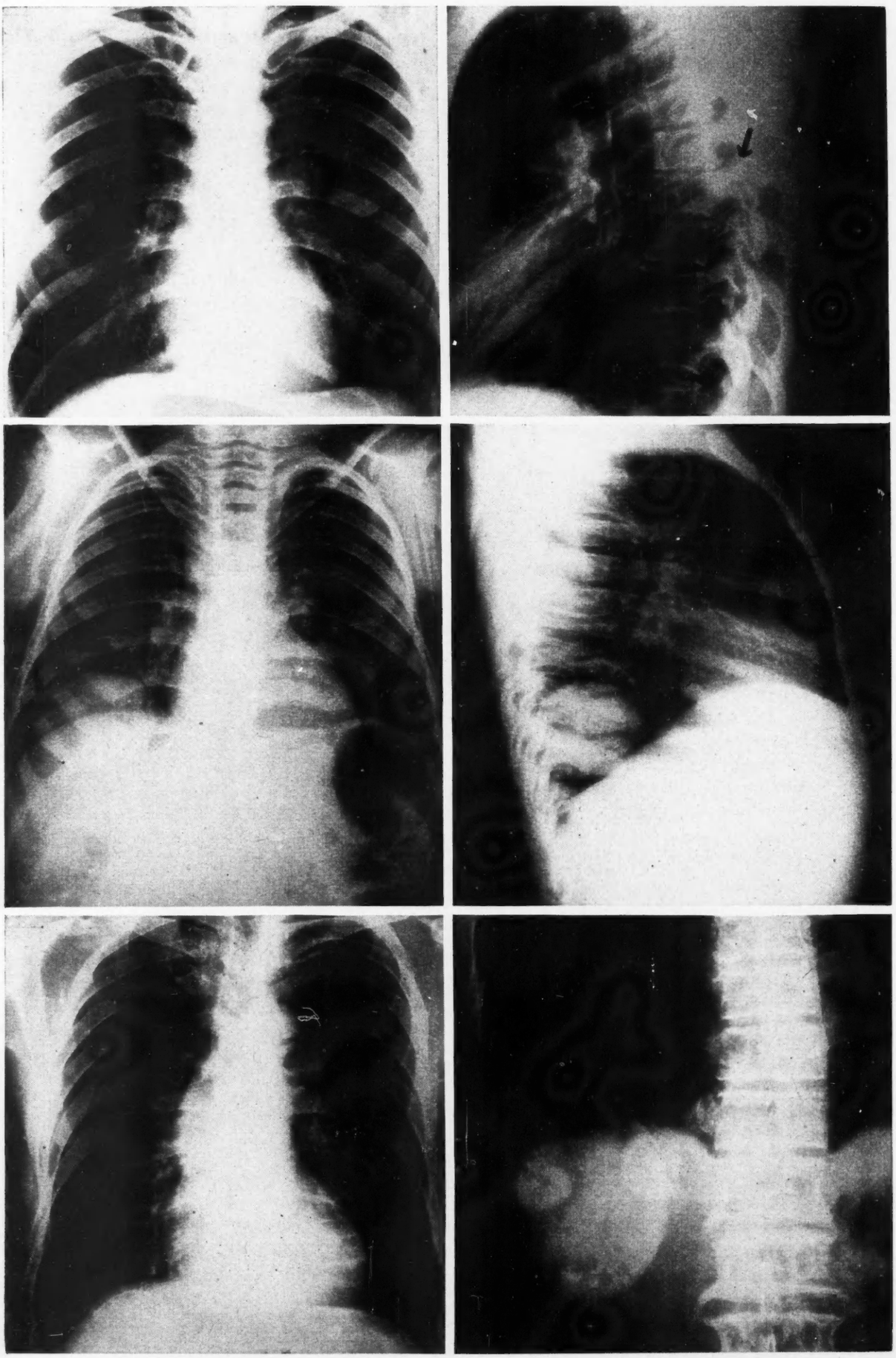

Fig. 2.—X-ray appearance of (a) simple hydatid cyst; (b) ruptured hydatid cyst (double arch formation); (c) calcified liver cysts as seen on films of the chest and the hepatic region.

of the membrane in the glottis, anaphylactic shock or severe hæmorrhage. The hydatid vomica is characterized by a peculiar sputum, formed of mucus, frothy red blood, hydatid sand and laminated membrane. The sputum is tenacious, tastes salty and causes violent paroxysms of cough. Less serious symptoms or even absence of symptoms may accompany the rupture. There is no way of forecasting the event. The other possible outcomes of the cyst are listed as follows by Barrett and Thomas:[39] (1) Sealing of the rupture with continuous growth of the cyst; (2) Elimination of the fluid but retention of the membranes with secondary infection and eventual abscess formation or daughter cyst production; (3) rupture into the pleural space with possibility of pneumothorax, pyothorax or daughter cyst formation; (4) rupture into the vascular system with spread of the disease by the systemic circulation.

In our series 35 patients were admitted to hospital, 29 with lung cysts and 6 with liver cysts; the others were observed in the field. Three liver cysts caused sufficient pain to require operation; the others were accidental findings on routine investigation. Of the 109 lung cysts, 54 have shown spontaneous rupture. The process seems to be a gradual enlargement over a period of about five years, reaching a diameter of approximately 8-10 cm. Two patients with ruptured cysts required hospitalization because of the severity of their hæmoptysis. Two patients ruptured their cysts while in the hospital and the event was only discovered on subsequent x-ray examination. One patient had an unexplained fluid collection in the abdomen with fever and pain, and was later operated upon for a left basal pulmonary hydatid cyst. Another patient had a pleural fluid collection which cleared spontaneously in two weeks after the rupture. Another patient had developed a chronic empyema following intrapleural rupture of a pulmonary hydatid cyst. In all the other cases the rupture was uneventful or presented itself as a mild illness evidenced by chilly sensation and a low-grade fever for a few days without obliging the patient to request medical aid. Daughter cysts were not seen in the five-year period of follow-up studies.

RADIOLOGICAL AND LABORATORY SIGNS

Simple pulmonary hydatid cysts are usually detected by radiography. The uncomplicated pulmonary cyst gives a regular, well-defined, rounded or oval shadow of uniform density which cannot be differentiated from that of a tumour.[40] The differential diagnosis has to be made from carcinoma, sarcoma, abscess, interlobar empyema, actinomycosis, tuberculoma, infarct, dermoid cyst and intrathoracic struma. The ruptured cyst will give a much more typical, even pathognomonic x-ray appearance. Three different gradations are described: (1) perivesicular air collection produced by the entrance of air between the adventitia and hydatid vesicle. (2) Double arch formation with air infiltrating around the cyst as well as inside the cyst (Cumbo's sign). (3) Complete disintegration of the cyst with floating of the retained membrane on the residual cyst fluid, giving the Camelot or water-lily sign. At this stage the radiological picture may simulate that of a tuberculous focus, abscess or carcinoma (Fig. 2).

Liver involvement may be suspected by the elevation of the right leaf of the diaphragm, with disturbance of its normal contour. Diaphragmatic excursion is decreased on fluoroscopy. The tennis-ball elevation of the dome is considered to be typical of *Echinococcus* cyst, and the presence of one or more dense, circular, calcified shadows in the liver parenchyma is pathognonomic for hydatid cysts (Fig. 2). In our series, only the calcified liver masses were included and disfiguration of the diaphragm alone was not considered as sufficient proof of the disease, though the phenomenon was observed frequently.

The laboratory diagnostic methods consist of intradermal, precipitin and complement-fixation tests as well as the detection of eosinophilia in the peripheral blood. Casoni's intradermal test is usually done by the injection of 0.1-0.2 ml. of sterilized hydatid fluid; a positive reaction will result in a central wheal with peripheral erythema within 10-30 minutes. The presence of pseudopodia is characteristic of the reaction. Delayed reaction may occur after 24 hours but is less frequently positive than the immediate reaction. The accuracy of the test varies from 53.8-100% with different authors, and it is considered to be the most reliable single test for hyatidosis. It is very likely that the reaction, once acquired, remains positive for life, even when the cyst is dead or surgically removed. There is some controversy on the changes in

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the positivity of the reaction in the case of rupture. Negative reaction practically excludes complicated cyst for Susman,[38] but for Dew[41] and Oberhofer[42] specificity will decrease with rupture. The precipitin test gives 65% and the complement-fixation test 52.4% positive results in cases of proved disease. The complement-fixation test remains positive only as long as a living cyst is present in the body. Godfrey[43] disagrees with these observations and considers the precipitin test as the most reliable, and Bensted and Atkinson[44] had better results with the complement-fixation test. No false positive results are described.

Of our 27 histologically proven cases, 15 had positive and 7 negative reactions to Casoni reagent; in 5 cases no test was done. All the negative results occurred with the Australian type of antigen. The increased specificity of endogenous antigen made available by Professor T. W. M. Cameron of the Institute of Parasitology, McGill University, is illustrated in Fig. 3. Since

Fig. 3.—Casoni's intradermal test 15 minutes after injection of 0.2 ml. of: I. Aklavik type antigen; II. Normal saline; III. Australian type antigen.

the introduction of this type of antigen, all but one of our radiologically and surgically proven cases reacted positively. A considerable number of patients had a positive Casoni reaction without evidence of pulmonary cysts, and therefore were supposed to harbour the disease in the liver or elsewhere or to have ruptured their cysts before investigation. In positive Casoni reactors with proven hydatid disease, six complement-fixation tests were positive and two were negative. Three positive precipitin tests were obtained, one in the presence of positive and two in the presence of negative intradermal tests. In two other cases, both the Casoni reaction and precipitin tests were negative. An eosinophilia over 4% is considered to be present in 50% of cases. In our patients the eosinophilia varied from 0-46% and was consistently elevated in four patients only, occasionally over 4% in 11 patients, and the eosinophil level was never higher than 4% in the remaining 12 patients.

A triad of negative Casoni test, negative complement fixation and absence of eosinophilia does not exclude the diagnosis in the presence of a typical radiological picture. The biological and x-ray investigatory techniques together will give the correct diagnosis in 90% of cases.

In 20 cases of pulmonary cyst the average vital capacity was 84% of normal. There was evidence of right axis shift with inverted T waves in lead 3 in the majority of electrocardiographic tracings done preoperatively for pulmonary hydatid cysts. In seven cases bronchographic studies did not aid in establishing the diagnosis; no dye entered the cyst cavity.

TREATMENT

Medical treatment is of no value in hydatid disease. The only type of medical management had been described by Castex and Capdehourat,[45] consisting of transthoracic intrapulmonary injections of sulfonamides and antibiotics. The induction of artificial pneumothorax with the intention of producing pressure on the cysts and secondary rupture was advised only for deeply located cysts and in the presence of multiple cysts,[46] but is mentioned only to be condemned.

The majority of publications dealing with echinococcosis are surgical, and for many authors[18, 38, 39, 42] the removal of every pulmonary cyst is the only treatment. The rationale of early surgical approach is to avoid the higher mortality and morbidity after complications begin.

The indications for operation in our series were the rapid growth of the cyst, secondary infection of the ruptured cyst cavity, empyema, and uncertain diagnosis. Because of the high incidence of spontaneous cures by rupture without known mortality and limited morbidity, the symptomless pulmonary cysts were followed up by constant radiological observation. As mentioned before, no daughter cysts have been observed to this date. The average period of observation before operation was 23 months with a range varying from 3 to 60 months.

The principles underlying surgical treatment are:[47] (1) removal of the parasite; (2) avoidance of contamination; (3) elimination of the residual space. In uncomplicated cysts the two-stage operation creating pleural adhesions at the first stage has been abandoned, and open thoracotomy is favoured,[48, 49] with the protection of the pleural space from contamination. Because there is never a direct fusion between the cyst and the lung, the hydatid cyst may be completely detached from the pericyst either by sudden inflation of the lung which will push out the whole cyst or by suction of the cyst. While there is a general agreement that no diagnostic (transthoracic) puncture of the cyst should be attempted, most surgeons favour operative aspiration of the cyst before hydatid delivery.[38, 42, 50, 51] This manœuvre technically facilitates the procedure and lessens the risk of accidental rupture. Barrett and Thomas stress that enucleation should not be preceded by aspiration. The empty pericystic sac may be sutured, drained or left alone. Some advocate postoperative drainage of the pleural cavity.[26] Additional marsupialization with ether or 2% of 40% formaldehyde is advocated for infected cysts, with subsequent drainage. These techniques avoid unnecessary removal of healthy lung structure. The resection of pericyst as an additional procedure is also advised for complicated cysts, though more radical resection is the treatment of choice in these cases. Segmental resection or lobectomy is advisable in the presence of severe hæmorrhage from the cyst, residual bronchiectasis, giant cyst, uncertain diagnosis and empty, infected or hæmorrhagic cysts.[48] Four pneumonectomies were reported in the literature reviewed. The mortality rate in surgical removal of cysts varied from 0.6% for simple to 10% for complicated cysts,[42] with an over-all mortality of 2.6%.[51]

In our series 23 pulmonary cysts were removed at operation. In the earliest cases the absence of a positive diagnosis resulted in a more radical type of treatment. Of the first 10 operated upon, 5 had lobectomy, 4 wedge resection and 1 segmental resection. Of the last 13 patients subjected to surgery, 12 had simple cyst removal, referred to as cystectomy, and the remaining one required a pleural decortication for chronic empyema following rupture of a basal cyst into the pleural cavity.

Cystectomy is very simple and very effective. On opening the pleural space the cyst has always been very easily identified. A fine needle is introduced and the cyst content aspirated, resulting in marked deflation. At the margin of the cyst an incision is made through the visceral pleura and by using suction the hydatid vesicle is removed easily and without any pleural leakage. The residual space is opened widely, and deeply placed catgut sutures are inserted to obliterate the space. Finally the visceral pleura is loosely closed with running catgut suture. The pleural space is drained by an underwater seal drainage to remove any blood or air accumulation.

In our entire series no complications have been encountered. Within two weeks the area of cyst removal has reverted to a normal appearance with a minimal linear x-ray shadow, which completely resolves in six weeks.

Liver cysts were surgically treated when they produced symptoms. Usually, simple enucleation without drainage of the residual cavity is adequate treatment. For subdiaphragmatic cysts the transthoracic approach is more convenient.

SUMMARY

The North American literature of echinococcosis is reviewed. The morphology, geographical distribution, morbid anatomy, clinical, radiological, and laboratory signs and the treatment of the disease are discussed. One hundred and eighty cases are reported from Alberta, the Yukon and Northwest Territories, where the disease is endemic in Indians and Eskimos.

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ADDENDUM

Seven more hydatid cysts have been removed from the lung since this paper was written. All cases were uncomplicated.

Case Reports

THE SIMULATION OF CARCINOMA OF THE COLON BY SEGMENTAL COLITIS

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TWO CASES are reported in which a preoperative diagnosis of carcinoma of the colon was made partly on the basis of a localized obstructing lesion, but in which subsequent pathological examination disclosed segmental colitis. Segmental (regional) colitis is an idiopathic inflammatory disease involving one or more segments of large bowel, exclusive of rectum and rectosigmoid, either as an extensive continuous lesion, or a single segmental lesion, or as multiple discontinuous segments. Pathologically the disease is considered by some to be akin to regional enteritis (Crohn's disease), by others as an atypical form of idiopathic ulcerative colitis, while occasionally its clinical simulation of carcinoma and diverticulitis of the colon has presented diagnostic problems of considerable magnitude. The following two cases are illustrative of this problem.

CASE 1. A 30-year-old logger began to develop periodic gnawing periumbilical pain maximal on the right side two months before hospitalization. The pain was not related to food or activity; it was relieved, however, by defæcation and by lying on the left side. During these two months, there was intensifying constipation which required increasing amounts of laxative for relief.

Three weeks before hospitalization, the patient's appetite decreased markedly, and because of nausea only fluids were tolerated. He lost 15 lb. in weight. On the day of hospitalization, crampy periumbilical pain was felt and he vomited sour, green fluid repeatedly.

Examination revealed a firm, slightly tender intra-abdominal mass in the right upper quadrant, which was fixed, irregular and about 3 inches (7.5 cm.) in diameter. Sigmoidoscopic examination was negative. The stools were free of occult blood. The white cell count was 13,000 with 83% neutrophils and 17% lymphocytes; the hæmoglobin level was 100% and urinalysis was negative.

An upper gastrointestinal barium series revealed moderate distension, without displacement, of the descending duodenal loop; the stomach and small bowel were normal while barium enema outlined a pronounced narrowing of the lumen and distortion of the mucosal pattern in a 1½ inch segment of the transverse colon just distal to the hepatic flexure (Fig. 1). The preoperative diagnosis

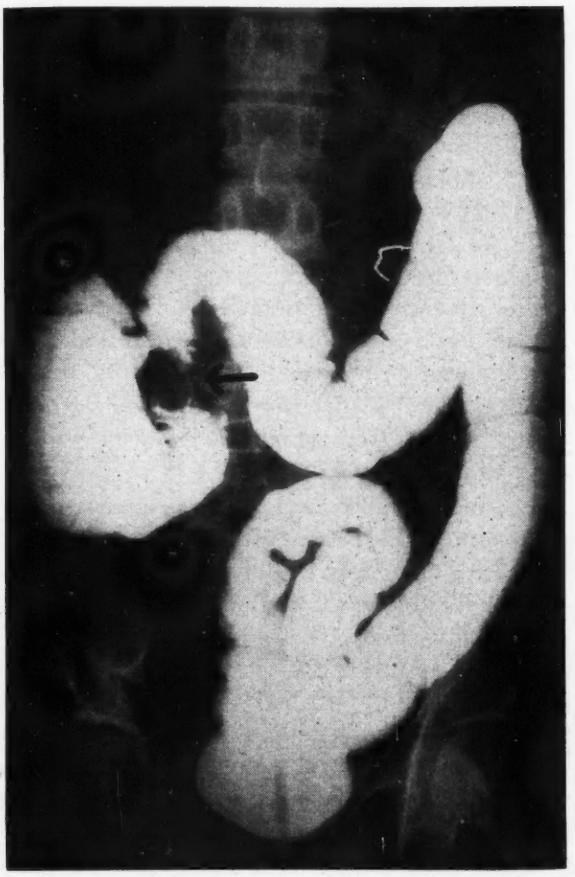

Fig. 1.—Barium enema showing linear filling defect in the transverse colon.

Fig. 2

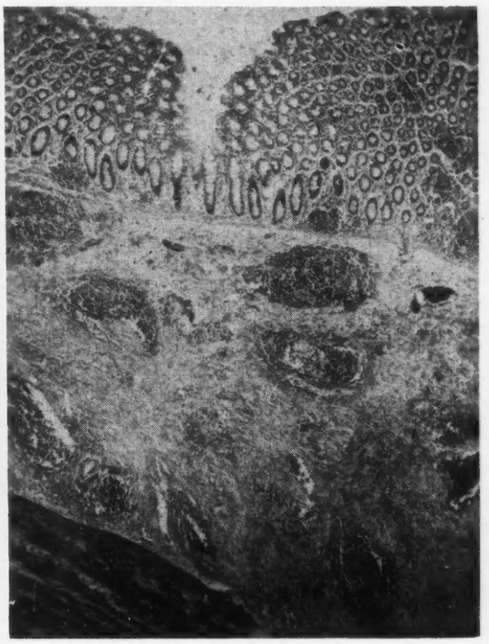

Fig. 3

Fig. 2.—Specimen of diseased colon from Case 1 showing the thickening of the submucosa.
Fig. 3.—Microscopic section of the specimen from Case 1. The thickened submucosa is studded with granulomata. The defect in the mucosa is an artefact. ×40.

clinically and radiologically was carcinoma of the transverse colon with posterior extension into the duodenal loop. At operation, the transverse colon immediately distal to the hepatic flexure, which contained the mass, was freed from the partially obstructed duodenum along a distinct plane of cleavage. A right hemicolectomy and end-to-end ileo-transverse colostomy were performed.

The wall of the colon at the point of obstruction was ¾ inch thick (Fig. 2), the thickening being chiefly in the fibrotic œdematous submucosa. The mucosa was œdematous and irregularly heaped up but not ulcerated, and the muscularis externa and serosa were thickened. All layers were infiltrated with chronic inflammatory cells; the submucosa and enlarged mesenteric lymph nodes were studded with a non-specific type of granuloma (Fig. 3). The diagnosis was segmental colitis involving the right half of the transverse colon.

The postoperative course was without incident; eight months later the patient was well and performing moderately heavy work.

CASE 2. A 70-year-old woman had experienced, for several months, vague epigastric discomfort one to two hours postprandially. Six weeks before operation she developed periodic crampy epigastric pain and nausea, intensified by food. Her bowel habit remained normal; there was no weight loss.

Examination revealed slight upper abdominal tenderness associated with an irregular, mobile 1½ inch, firm mass in the left upper quadrant, adjacent to the midline. Sigmoidoscopic examination was negative.

Barium enema revealed a 1 inch linear filling defect with distortion of the mucosal pattern in the mid-transverse colon. The stools were free of occult blood, the urinalysis was negative and there were no abnormal hæmatological findings. At operation the transverse colon containing the rubbery mass was resected as for carcinoma and end-to-end anastomosis performed. The resected mesentery contained several firm, grossly enlarged lymph nodes. Pathological examination of the obstructing lesion revealed segmental colitis. Two years postoperatively, the patient was asymptomatic and clinically free of recurrent disease.

DISCUSSION

Segmental (regional) colitis, depending on its presenting symptomatology, location and extent, may readily simulate the clinical picture of carcinoma or diverticulitis and may also cause difficulty in differentiating it from various specific and idiopathic inflammatory diseases of the colon such as chronic ulcerative colitis and regional enteritis (Crohn's disease), bacillary dysentery, the hypertrophic form of tuberculosis, actinomycosis and amœbic granuloma. The exact differential diagnosis among the inflammatory diseases of the colon is often hampered by the gross similarity of their physical signs and symptoms, and in the inflammatory cases which develop intestinal obstruction, the differentiation of the group from carcinoma may offer further diagnostic problems, as illustrated in the cases presented.

Segmental colitis is an idiopathic inflammatory disease primarily affecting the colon, but in some cases having an associated ileitis. This low-grade inflammatory disease is thought to spread by direct extension in the mucosa and submucosa of the colon. In this manner the terminal ileum is secondarily affected in 20%-25% of cases. Pathologically, colonic segments of varying length are thickened and fibrosed; the mesenteric lymph nodes may be enlarged, rubbery and discrete. Microscopically, the major collagenous

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thickening is confined to the submucosa, which may also contain numerous granulomata (Fig. 3); the mucosa is œdematous but rarely undergoes ulceration. Segments of transverse colon are most frequently involved—the right colon more so than the left. Indeed there is a progressive decrease in the incidence of segmental colitis distal to the transverse colon. It is almost never seen in the recto-sigmoid or rectum. Occasionally the disease occurs initially and remains localized in the sigmoid colon, clinically simulating diverticulitis. Conversely, a short, isolated colonic segment may be affected by the disease, giving rise to intestinal obstruction which is clinically and radiologically indistinguishable from carcinoma (Fig. 1). More commonly the disease spreads in continuity or discontinuity (skip areas) from the cæcum towards the rectum, in which case the clinical picture may resemble that of ulcerative colitis including its constitutional manifestations such as fever, arthritis, ocular changes and perianal lesions. The presenting symptom in these cases is usually diarrhœa. The sigmoidoscopic examination is as a rule negative. Newman in a series of 196 cases of segmental colitis noted that the onset of disease was sudden in 67.4%, diarrhœa was present in 86.5% with bloody stools in over half of these, and various types of abdominal pain were present in 68.6%. Intestinal obstruction was present in 15% of cases, in the majority of which only a single short segment was affected.

Examination was negative in 67% of the cases; abdominal tenderness was present in 28% and confined to the right or left lower quadrants. In keeping with the nature of the disease, the sigmoidoscopic examination was negative in 88.9%, while perianal and perirectal suppuration was present in only 13.7%.

In a series of 858 patients with inflammatory disease of the colon, at the Massachusetts General Hospital, 683 (79.6%) had ulcerative colitis, 150 (17.4%) had regional enteritis and 25 (3%) had segmental colitis which, as in the other two diseases, had a peak incidence of onset in the third decade.

It would seem that segmental colitis, both clinically and pathologically, occupies a midposition between ulcerative colitis and regional enteritis. Surgery is the treatment of choice in the majority of cases, the best results following resection and anastomosis rather than a short-circuiting procedure in which extension of disease is not uncommon, though the rectum is not likely to be involved. These results hold in all cases regardless of whether the signs and symptoms are constitutional or limited to the gastrointestinal tract. As illustrated in the cases presented, the localized or obstructive form of segmental colitis is usually free of constitutional symptoms, which makes the differential diagnosis from carcinoma even more difficult; indeed the final diagnosis may not be resolved until the tissue is examined histologically by a pathologist. It is hoped that awareness of this problem may prevent others from making such a misdiagnosis, with all its attending sequelæ.

I wish to express my thanks to Dr. R. V. B. Shier of Toronto for allowing me to include the second case in which we were associated.

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CÆCAL WALL APPENDICITIS

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THE PURPOSE of this paper is to report a case of "cæcal wall appendicitis". It is of interest because an examination of the literature does not disclose a similar case.

A 64-year-old former Royal Navy Chief Petty Officer was admitted to the Surgical Service of Walton Hospital, Liverpool, England, on January 22, 1954, with complaints of abdominal pain and diarrhœa for the past 1½ days. He had been perfectly well until 36 hours before admission when he first became aware of periumbilical, crampy pain. It became more severe and localized in his right lower quadrant three hours before admission to hospital. He had taken two ounces of castor oil shortly after the onset of his illness.

In his general examination the only important findings were the well-developed stigmata of acromegaly. His pulse and temperature ratio was normal.

Abdominal examination revealed normal bowel sounds and a moderate obesity without gaseous distension. Muscle guarding and tenderness were present in the right lower quadrant. The point of maximum tenderness was beneath McBurney's point. Rebound pain was also referred to this area. Rovsing's sign was positive. There was no evidence of a mass in the right lower quadrant. On rectal examination exquisite tenderness was found high on the right side.

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A diagnosis of acute appendicitis was made and the patient was prepared for operation. The abdomen was opened through a Rutherford Morison muscle-cutting incision. The cæcal wall was found to be red and œdematous and the appendix very short and subcæcal in position. The serosa of the appendix was slightly injected.

On palpation of the cæcum a hard mass about 4 cm. in diameter was felt. It lay in the medial wall of the cæcum close to the base of the appendix and felt like a carcinoma. This diagnosis was confirmed by a surgical consultant. There was no evidence of lymph node enlargement.

The incision was enlarged medially and the right rectus muscle was transected. A right hemicolectomy was done followed by an end-to-end anastomosis between the terminal ileum and the transverse colon, and the abdomen was closed with drainage.

It was with some consternation that we found the "mass" to consist of a large fæcolith surrounded by an abscess cavity filled with yellowish pus (Fig. 1). The

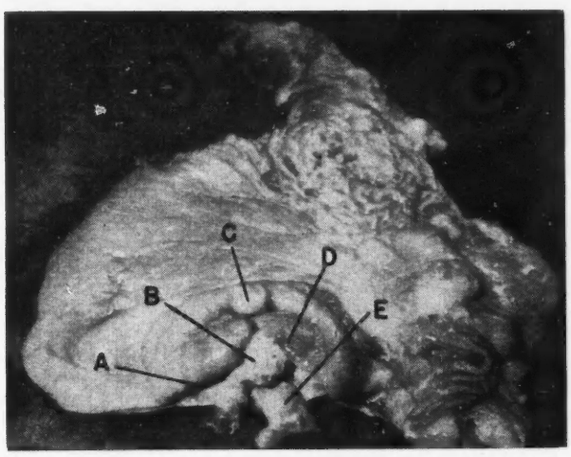

Fig. 1.—Photograph of operative specimen. (A) Interior of abscess cavity. (B) Fæcolith. (C) Benign polyp. (D) Muscularized wall separating the lumen of the cæcum and the abscess cavity. (E) Appendix.

fæcolith itself measured 1.5 cm. in diameter and 2.4 cm. in length, and the abscess cavity was lined with attenuated mucous membrane continuous with the lumen of the appendix. There was no evidence of a communication between the abscess cavity and the lumen of the cæcum. Indeed, the two cavities were separated by two layers of mucous membrane and a layer of muscle. In addition a small benign adenomatous polyp was present.

The patient made an uneventful recovery and was discharged on his 21st postoperative day.

A neurosurgical consultant agreed that this patient was acromegalic but declared the case to be "burned out".

DISCUSSION

The paucity of reported cases of "cæcal wall appendicitis" testifies to the rarity of the condition. In retrospect the mass *in situ* felt smoother and more resilient than a carcinoma. If a biopsy had been done to confirm the diagnosis before proceeding to resection, gross contamination of the peritoneal cavity would have ensued.

A curious feature of this case is the short duration of symptoms. The size of the abscess and the presence of a large fæcolith suggests that the pathological process had been under way for longer than 36 hours. The patient, however, denied any previous gastrointestinal upset even on direct questioning after operation. A possible explanation is that the Royal Navy Chief Petty Officers are made of very stern material and a major catastrophe must be present before they will admit that all is not "ship shape and Bristol fashion".

The etiology of this condition is obscure. The normal distribution of the tæniæ to the base of the short appendix and the presence of a muscularized wall between the abscess cavity and the cæcal lumen suggests a congenital origin. A comparable diaphragm occurs in the duodenum and is thought to be a localized failure of recanalization of the gut in the 30- to 60-day embryo (Tandler[1] and Forssner[2]).

It is, however, questionable whether the colon undergoes this stage of proliferation and vacuolization. In this case there seems to be no other rational explanation.

SUMMARY

A case of "cæcal wall appendicitis" is presented. A possible embryological explanation is suggested.

I would like to thank Mr. Phillip Hawe and Mr. A. F. Murphy for permission to publish this report.

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RUPTURE OF A GASTRIC ARTERY ANEURYSM*

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RUPTURED ANEURYSM of a gastric artery is an uncommon cause of massive, usually fatal, intragastric hæmorrhage. Millard[1] has recently published an excellent review of the literature and added a case of his own to make a total of 16 authenticated cases. His report was concerned with true arteriosclerotic aneurysms not associated with peptic ulceration. The case presented here is an example of an arteriosclerotic aneurysm with certain associated findings not present in those cases previously published.

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J.F.L., a white male, aged 74, was admitted to the Regina Grey Nuns' Hospital from an outside hospital on December 14, 1954 with a history of tarry stools almost daily for ten days and hæmatemesis recurring daily for eight days. The patient had experienced occasional episodes of hæmatemesis, and the last of these had occurred in 1939. At this time the hæmatemesis had followed a back injury (kicked in the back by an animal). Since January 1954, he had had occasional attacks of giddiness, and in August 1954, the patient had become unconscious while working in the garden. This unconsciousness was not associated with loss of speech, paralysis, incontinence, or hæmatemesis. In September 1954, he had been examined and treated at the Regina Cancer Clinic for a large ulcerating malignant lesion of the right cheek.

At the time of admission, his temperature was 99.4° F., pulse rate 56, respiration rate 16, and blood pressure 128/56 mm. Hg (the usual blood pressure for this patient was given by the family doctor as 180/100). The hæmoglobin value was 58% (9.0 g. %); hæmatocrit 31.5 c.c. red cells/100 c.c. of blood; white cell count 9,200 with 78% neutrophils, 2% eosinophils, 11% juvenile polymorphonuclear leukocytes, 4% lymphocytes and 4% monocytes. The urinalysis of a catheter specimen showed 6-8 pus cells per high-power field, a few red cells, no albumin and an S. G. of 1.010. The day after admission, the hæmoglobin value was 53% (8.2 g. %); prothrombin time (Quick's one-stage method) 80%; blood urea 146 mg. %; CO_2 combining power 58 vols. %; plasma chlorides 103.7 mEq./l.; serum sodium 135 mEq./l.; and serum potassium 4 mEq./l. A gastric series showed only a questionable defect in the lower œsophagus which might have been an ulcer crater. Therapy consisted of intravenous infusions, blood transfusions and continuous gastric suction. In spite of repeated transfusions the hæmoglobin value dropped as low as 22% (3.5 g. %). On December 19, 1954, the patient developed gangrene of the right foot. Following this, the blood pressure varied from 110/50 to 126/72, and the temperature ranged between 99° F. and 103° F. He died on December 31, 1954, at 7.00 a.m.

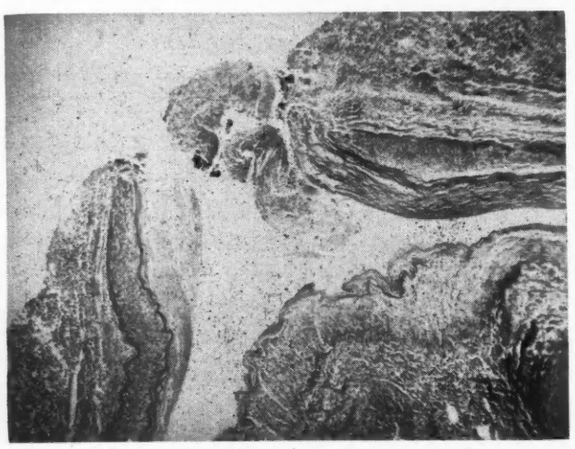

Fig. 1.—Section including part of an arterial aneurysm with the disrupted ends projecting through the gastric mucosa. (H. & E.—Magnification × 32.)

The autopsy was performed six hours later. There was moist gangrene of the right foot and decubitus ulceration of the skin overlying the sacrum. The superficial vessels contained very little blood. The heart was enlarged (425 g.), and the myocardium of the left ventricle had an average thickness of 1.7 cm. There was moderate atherosclerosis of the coronary arteries and moderate generalized arteriosclerosis. The pulmonary artery contained a large antemortem clot which extended into both main branches. There was an organizing thrombus in the left femoral vein. A few of the smaller branches of the pulmonary artery in each lung contained partially organized thrombi. Throughout both lungs there were small areas of recent infarction and small caseous nodules, 0.5 cm. or less in diameter. There was a small right hydrothorax. The left pleural cavity was almost completely obliterated by fibrous adhesions, which were especially dense between the base of the left lung and the diaphragm. There was no free fluid in the peritoneal cavity. There were dense fibrous adhesions involving the peritoneal surface of the left diaphragm, the spleen, and the upper posterior serosal surface of the stomach. The dome of the left diaphragm was thickened and partially calcified. The splenic tissue was very soft. The œsophagus and stomach were collapsed, and no ulcerative lesions of the œsophagus were seen. There was scarring of the mucosa of the posterior surface of the pylorus. At this time the stomach was freed from the spleen and placed in 10% formalin. The remainder of the gastrointestinal tract showed no abnormalities except for tarry fæcal material in the transverse and descending colon. The left kidney had a double ureter. The stomach was then examined after formalin fixation. A small, elevated, reddish-brown area, 0.3 cm. in diameter, was seen on the posterior wall approximately 3 cm. distal to the cardia and 2 cm. from the lesser curvature. Tortuous blood vessels could be felt in the wall of the stomach in this area, and two branches of the left gastric artery could be traced from their origin to a point where they had been severed in the process of freeing the stomach from the spleen. These arteries were located mainly in the submucosal layer, and one of them showed an aneurysmal dilatation approximately 4 cm. long and 0.4-0.6 cm. in diameter. In one area the aneurysm had ruptured through the overlying mucosa, producing the small nodular lesion seen grossly.

Microscopically, the sections of the stomach showed a dilated tortuous vessel in the submucosa which had the structure of a muscular artery. There were three well-defined layers in most areas. French's elastin stain showed some fraying of the internal elastic lamina. The intima was thickened in many areas and there were occasional small deposits of calcium at the junction of intima and media. The media appeared to be present up to the actual point of disruption in the sections showing the actual rupture. Sections immediately adjacent to the disrupted area showed a complete absence of the media in this portion of the artery. The wall here was composed of homogenous, eosinophilic, almost acellular material which appeared to be continuous with a thickened and hyalinized intima, and it was this portion of the vessel which had ruptured. There was no evidence of peptic ulceration in this area. Sections of the left diaphragm showed splenic tissue above and below densely hyalinized tissue in which there was a heavy deposit of calcium salts. There were pigment-laden histiocytes and cholesterol clefts in the adjacent fibrous tissue. The appearances suggested an organized subcapsular hæmatoma or a healed rupture of the splenic capsule. In addition there was an area of healed peptic ulceration of the pylorus; "healed" miliary tuberculosis of the lungs; and early bronchopneumonia.

DISCUSSION

This case has some of the features of those previously reported. The involved artery showed some arteriosclerosis and the patient was male. However, this case also showed evidence of an old splenic injury, and it is possible that the adhesions in this area may have been a causative factor in the development of the aneurysm. The clinical findings were much the same as those in previously reported cases, namely, signs and symptoms of massive intragastric hæmorrhage with no demonstrable lesion radiologically. Subtotal gastrectomy is often the treatment of choice in cases with such clinical findings if the patient

is considered a reasonable surgical risk. As Millard and other authors[2] have already stressed, this lesion should be considered in those cases of massive hæmatemesis in elderly males when there is no radiologically visible lesion, especially if bleeding continues after subtotal gastrectomy. A careful examination of the surgical specimen is desirable in all cases where the location of the bleeding point has not been determined before or during operation, as these lesions are small and easily overlooked.

SUMMARY

A case of aneurysm of a gastric artery which ruptured intragastrically is presented.

The lesion occurred in an elderly male and the involved vessel showed early arteriosclerosis, as in previously reported cases.

It is possible that in this case the old splenic injury may have been a causative factor.

The author wishes to thank Dr. D. C. MacRae, Regina, for kindly giving permission for the publication of this case, and Mr. H. Wood for the preparation of the photomicrograph.

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FAMILIAL HÆMOLYTIC ANÆMIA: CONCURRENT CRISES IN THREE MEMBERS OF A FAMILY*

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THERE ARE AT LEAST ELEVEN reports in the literature describing concurrent crises in members of families affected with familial hæmolytic anæmia. In none of these cases has there been any demonstrable precipitating factor, and the cause of the phenomenon is unknown. The present report documents another instance of concurrent familial hæmolytic crises.

The family, consisting of a father, mother, and four children, lived in a small town in rural Manitoba. All were in good health until December 8, 1952, when Clare, aged 18, became ill with nausea, vomiting and abdominal pain. She was working in Winnipeg but spent the weekend of December 6 and 7 in the country with her family. On December 13, she returned to her parents' home and she was then observed to be jaundiced. The next 10 days were spent in bed and by December 20 she had recovered. In the meantime, her younger sister Shirley, aged 14, with whom she was sleeping, became ill.

Shirley's sickness began on December 14 with vomiting and headache, followed shortly by the appearance of jaundice. On December 19 she was admitted in a semistuporous state to a country hospital. Her hæmoglobin level was stated to be 20%. She was given two bottles of blood and transferred to the Winnipeg General Hospital on the evening of December 20, 1952. She was a slight, pale girl, without definite icterus, semi-stuporous but easily roused. The temperature was 102° F., the pulse rate 125 and the respiration rate 28. The pupils were small and reactive. The mouth and tongue were dry and there were general signs of dehydration. There was no lymphadenopathy. The chest was clear; the heart was rapid with ill-defined murmurs. The liver was not palpable; in the left upper quadrant there was some resistance which was thought to be spleen, but it was soft and not definitely palpable. The skin and mucous membranes showed no hæmorrhages. There were some equivocal neurological findings. Routine urinalysis was normal. Hæmoglobin level was 5.8 g.; leukocyte count 10,800.

The presenting picture was that of high fever, severe anæmia and splenomegaly. The differential diagnosis included acute leukæmia, acute hepatitis, and some acute hæmolytic process, possibly infective. Pending the completion of tests in the morning, the following supportive therapy was ordered to be given over the next 12 hours: 1,000 c.c. of whole blood, 1,500 c.c. of 10% invert sugar in distilled water with 1 g. of terramycin added to the intravenous fluid. In the morning her condition was unchanged. At 1:00 p.m. she suddenly went into circulatory collapse, with pulmonary œdema, and died.

While in retrospect the diagnosis could have been made at the bedside from an examination of the peripheral blood smear, this was not carried out until the morning after admission and the reports became available only after death. Differential count showed mature neutro-

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phils 91; young neutrophils 0; eosinophils 1; lymphocytes 4; monocytes 4; occasional plasma cells. The average erythrocyte diameter was 6.0 μ, the range being 4-11 μ. The erythrocytes showed hypochromia 1+; poikilocytosis 1+; anisocytosis 3+; microcytosis 3+; macrocytosis 1+; polychromasia 1+; spherocytosis 3+. A reticulocyte count was ordered but the test was not completed. The cerebrospinal fluid showed a total protein of 10 mg. %, no cells, and a negative colloidal gold reaction. The serum bilirubin level was 3.0 mg. %.

A bone-marrow aspiration performed half an hour post mortem was reported by Dr. J. M. Lederman as follows: "The leukocyte series is essentially normal. There are many clumps of phagocytic reticulo-endothelial cells. Differential count of the erythrocyte series shows megaloblasts 7.8%; early erythroblasts 6.5%; late erythroblasts 6.2%; normoblasts 0.3%. The active erythropoiesis at an early erythroblastic level and the very small erythrocyte size with a high proportion of spherocytes are consistent with a congenital hæmolytic anæmia in exacerbation."

At autopsy there were no significant findings except that the spleen weighed 480 g., and on microscopic examination showed marked congestion with a loss of structural detail. A diagnosis of familial hæmolytic anæmia in acute crisis was consistent with the clinical picture and the findings in the peripheral blood and bone marrow. Up to this point the family history[1] of jaundice had not been recognized.

On December 22, 1952, Karl, aged 11, became jaundiced and began to run a fever. On December 25, he developed severe epigastric pain, vomited, and had two nosebleeds. He was admitted to the Winnipeg General Hospital on December 26. He was fully conscious and cooperative. The temperature was 104° F.; pulse 120; respiration rate 25. The scleræ were jaundiced. He had herpes facialis. There was no lymphadenopathy. The lungs were clear. There were faint aortic and apical systolic murmurs. The liver was not palpable; the spleen was felt 3 cm. below the costal margin on inspiration. There were no neurological abnormalities. There was no bile in the urine and the urobilinogen concentration was 0.45%. Urinalysis was negative. Spectroscopic examination was negative for hæmatin, coproporphyrin, and hæmatoporphyrin. The Coombs test was negative. Hæmoglobin level was 5.8 g. %; the erythrocyte count 1.9 million; the leukocyte count 10,800. Erythrocyte sedimentation rate was 62 mm. in 1 hour (Westergren). The differential count showed mature neutrophils 32; young forms 24; eosinophils 1; basophils 1; lymphocytes 25; monocytes 15; plasma cells 2. Smear showed an average red cell diameter of 5.9 μ; anisocytosis 2+; and spherocytosis 2+. Reticulocytes 0.9%. M.C.V. 69 cubic microns. M.C.H. 24 $\gamma\gamma$. M.C.H.C. 35%. Hæmolysis began at 0.5% saline and was complete at 0.42%. Serum bilirubin was 2.6 mg. %. Bone-marrow examination showed many spherocytes and marked megalo-erythroblastic hyperplasia (megaloblasts 8.5%; early erythroblasts 13.9%; late erythroblasts 13.5%; normoblasts 1.5%.) Diagnosis: Familial hæmolytic anæmia with maturation arrest.

The patient was given two pints of blood on December 26. Thereafter, his condition improved rapidly. The fever abated. The serum bilirubin level fell from 2.6 mg. % on admission to 1.6 mg. % on January 12. The following hæmoglobin levels and reticulocyte counts were recorded:

Date	*Hb (g. per cent)*	*Reticulocyte count (per cent)*
December 27	6.6	0.9
December 29	6.9	
December 30	6.4	0.5
January 2	6.9	19.6
January 4	8.4	12.2
January 6	9.5	9.1
January 12	11.2	6.8

The patient was discharged on January 14, 1953.

It was subsequently established on questioning the parents that jaundice had been observed in three of the four children on at least one previous occasion, but this had not been a matter of concern as it apparently had not affected their health. Both Clare and Karl recalled previous jaundice associated with dark urine. The father, aged 50, a weatherbeaten Swedish-born fisherman, had always been healthy and had never been aware of jaundice or of dark urine. There was no known jaundice in any of his family. His father had died at age 90 and his mother at age 50, of unknown cause. He was the only survivor of 12 children, 10 having died in infancy and 1 at the age of 14, all of unknown cause. Physical examination was normal. His hæmoglobin level was 14.5 g. %; and his reticulocyte count was 1.2%. Blood

smear showed anisocytosis 3+; and spherocytosis 2+. Hæmolysis began at a dilution of 0.5% saline and was complete at 0.46%. The icterus index was 11, but the serum was cloudy, and the icterus was probably not above normal. The mother, aged 44, of Icelandic extraction, was born in Canada, one of five siblings. She had always been well, and there was no family history of jaundice. Studies of her blood were normal in all respects. Physical examination and blood studies of Louis, aged 17, were negative and there was no history of jaundice. Clare, aged 18, while the first one to become ill, was not seen until she had recovered, at which time she did not appear icteric. Her spleen was palpable 3 cm. below the costal margin. Her hæmoglobin level was 9.5 g.; erythrocyte count 3.5 millions; leukocyte count 5,100 and reticulocyte count 8.6%. Blood smear showed spherocytosis 2+. M.C.V. 87 cubic microns. M.C.H. 27 γγ. M.C.H.C. 31%. A red cell fragility test showed hæmolysis beginning in 0.5% saline. The serum bilirubin was 2.6 mg. %.

It was apparent, therefore, that the father was the carrier of the hæmolytic trait and that three of the four children had inherited the disease. It was unfortunately impossible to trace back to preceding generations. The family tree is outlined in Fig. 1.

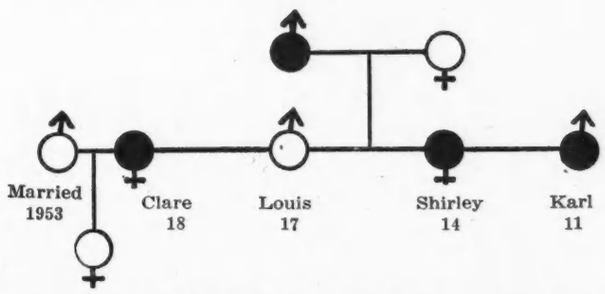

Fig. 1.—Familial hæmolytic anæmia: concurrent crises in three members of a family.

Clare underwent splenectomy on February 27, 1953, followed by an uneventful convalescence. Postoperatively the serum bilirubin level fell from 3.6 to 0.7 mg. %. Hæmoglobin level rose from 11.2 to 13.9 g. %; the erythrocyte count from 3.93 to 5.20 millions. Reticulocytes fell from 4.4 to 1%. The spleen weighed 334 g. and measured 12.5 x 10.5 x 4.5 cm. The pulp was stuffed with blood, the lymphoid tissue was relatively scanty. The endothelium lining the sinusoids was cuboidal. Clare was married shortly after her splenectomy. In May 1955 her 9-month-old female child showed a normal blood picture with no spherocytes and no increase in red cell fragility. On March 30, Karl underwent splenectomy; there were no complications. The hæmoglobin level rose from 11.2 to 12.6 g. %; the erythrocyte count from 4.26 to 4.55 millions. The serum bilirubin fell from 2.8 to less than 0.2 mg. %; the reticulocyte count from 7.1 to 3.9%.

DISCUSSION

Eleven reports have been found recording the simultaneous occurrence of crises among different members of families with congenital hæmolytic anæmia. In no case was there any demonstrable precipitating factor, such as exposure, infection, drugs, or autohæmagglutinins. As many as eight members of a family have had concurrent crises, the actual numbers reported being: four,[1] three,[2] eight,[3] four,[3] six,[4] five,[5] five,[6] four,[7] two,[8] four,[9] four,[10] two.[11] It was considered of interest to add a further instance of multiple concurrent crises in a family with hereditary spherocytosis.

SUMMARY

Over the course of 15 days, three siblings with hereditary spherocytosis developed acute exacerbations of their disease, with one fatality. The other two recovered and were later subjected to splenectomy. There was no evident precipitating factor. Study of the family showed the father to be the carrier.

The authors are indebted to Drs. T. Johannesson, Arborg, and G. Johnson, Gimli, who provided details of the illnesses before admission.

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CLINICO-PATHOLOGICAL CONFERENCE. IV.

MONTREAL GENERAL HOSPITAL, JANUARY 19, 1956.

TERENCE C. TODD, M.D.,
H. ERNEST MACDERMOT, M.D. and
WILLIAM H. MATHEWS, M.D.,
Editors, *Montreal*

PROTOCOL

A 42-year-old white woman was admitted to hospital because of shortness of breath for six months, swelling of hands, legs and body for six months, tiredness and loss of appetite for one year, and pallor for five years.

The patient had not been perfectly well for about one year, when she first noticed the onset of tiredness and loss of appetite. There were no other complaints at this time, except for pallor of some five years' standing. Six months previously she first noticed shortness of breath on exertion, and swelling of the ankles. Both of these had progressed until she was unable to lie flat, and was even breathless when sitting. She was also now œdematous over the legs, hands and body, especially around the sacrum. The patient was in another hospital for five weeks, where she was told she had sugar in her blood. She was discharged one month previously. She had been given parenteral liver while in this hospital, and was informed that her blood count had gone up. There had been slight remission of the swelling and shortness of breath. In the ensuing three weeks she had regressed to her former state. Her weight one year before had been 185 lb. The next summer it was 145 lb., but she had been on a diet for diabetes.

Physical examination revealed a pale, dyspnœic, œdematous white female. Her temperature was 98.4° F., pulse 120, respiration rate 24 and B.P. 180/105 mm. Hg. There was dullness at both lung bases for three finger-breadths. The heart was enlarged to the left. There was a harsh scratchy murmur over the tricuspid area and just to the left of the sternum in the third interspace. It occurred in both systole and diastole. There was marked œdema of the abdominal wall. The liver was percussible two fingerbreadths beneath the right costal margin. Shifting dullness was present. There was œdema of the lower limbs up to mid-thighs, œdema of the sacrum and also of the right hand.

Laboratory findings:

Urine: (Multiple analyses, at least one being of a catheter specimen)—S.G. 1.014-1.018; albumin 100 mg. %; glucose—trace; occasional erythrocytes (up to 10); white cells 30-40; granular casts.

Blood:

	R.B.C.	W.B.C.	Hb.
Feb. 3	1,920,000	21,900	40%
Feb. 20	3,920,000	14,250	78%

Sternal puncture:

Feb. 8: "Granulopoiesis is very active. Erythropoiesis is normoblastic."

Blood chemistry:

Feb. 3	Urea nitrogen....	73 mg. % (10-20)
	Sugar.....	156 mg. % (80-120)
Feb. 6	Urea nitrogen....	96 mg. %
	Total protein....	6.08 g.% (6.0-8.0)
	Albumin.....	4.23 g. % (4.0-5.5)
	Globulin.....	1.85 g. % (1.4-3.0)
	CO_2 comb. power	23 c.c. % (50-70)
Feb. 13	Urea nitrogen....	112 mg. %
	Creatinine.....	13.04 mg.% (1.0-1.5)
	Cholesterol.....	235 mg. % (150-200)
Feb. 18	Urea nitrogen....	98 mg. %
Feb. 27	Urea nitrogen....	134 mg. %
	Creatinine.....	3.22 mg. %
	Total protein....	6.56 g. %

Aschheim-Zondek Pregnancy Test: negative on Feb. 11.

Pleural fluid negative for tumour cells on February 6.

E.C.G. February 10: "Left axis deviation, rate 108. In 1, 2, V4 and V6 depressed ST. QT interval very short. In V4 low, notched QRS. with negative T. No signs of potassium intoxication. The ST changes could be due to digitalis, to myocardial changes, or both."

Course in hospital:

Patient was admitted by ambulance on the evening of February 2. Random notes were as follows: February 3 (Assistant resident): "This is not a case of pernicious anæmia—she received huge doses of parenteral liver with no *definite* improvement. No history of visible blood loss, or jaundice or kidney disease or alcoholism . . . . "

February 4 (Attending physician): "The striking features are the absence of œdema of the face, the pallor and the œdema of both arms to above the elbows, more marked on the right side. B.P. 190/110. Dullness at both lung bases, with the impression of blowing breathing, suppression of breath sounds and egophony. Probably due to pleural effusion. There is a pericardial friction rub throughout the precordium. There is œdema which extends to approximately the tenth dorsal vertebra posteriorly and slightly above the costal margin anteriorly. The œdema is more marked on the right side of the abdomen, and this, with the arm œdema, suggests a postural effect. The œdema of the lower extremities is marked. Knee jerks equal and active. One's first impression is that of *glomerulonephritis*. This is supported to some extent by the laboratory data. However, in my experience, the degree of anæmia is not consistent with a blood urea of only 73 mg. %, and apparently a relatively short illness. There is no history of renal involvement with past pregnancy."

February 6. Thoracentesis: 800 c.c. of clear yellow fluid removed from each side. S.G. 1.012. Patient digitalized with 1.2 mg. digitoxin and thereafter maintained on digitalis leaf grain 1½ q.d.

February 8 (Assistant resident): "Question of patient's being pregnant has been raised, with reference to toxæmia of pregnancy. To have A-Z test."

February 10 (Assistant resident): "Pupils dilated with homatropine and examined. The fundi are remarkably good—no papillœdema—slight arteriovenous nicking and increased light reflex. One tiny linear hæmorrhage seen at 10 o'clock in the right fundus. No exudates. B.P. 200/92 with no pulsus alternans. No vomiting yet."

February 11 (Attending physician): "Pericardial friction rub has disappeared, and it is now possible to make out a systolic murmur along the left sternal border and at the apex. A_2 accentuated. In the upper right chest there is a palpable and audible friction rub. B.P. this a.m. 190/90."

March 1 (Assistant resident): "Patient doing poorly. Although her colour is excellent and she seems to be maintaining her transfused blood count, her blood urea nitrogen level has risen. Œdema unchanged. Daily urinary output practically nil. This past week she has done some vomiting which she claims is due to cough. The heart is still hyperactive, although pericardial rub much less or gone."

March 3: Patient died.

She had been afebrile throughout. She had received 350 c.c. whole blood and eight transfusions of 250 c.c. packed cells—the last one on February 22. For diuresis she had had—with slight success—ammonium chloride and Thiomerin.

DIFFERENTIAL DIAGNOSIS

Dr. Todd: Today we have as discusser Dr. Neil Feeney, senior physician of the Montreal General Hospital and director of the department of electrocardiography. Before asking him to discuss this case I want to anticipate a rather obvious question. No x-rays or x-ray reports are available on the case, either from the autopsy record or from the x-ray files in the radiology department.

Dr. Feeney: There are only two things that we are quite sure of in this report—that the patient was a white woman and that she was 42 years of age. One thing I am unable to understand is that on February 3 she had a urea nitrogen of 73 mg. %, on February 6 of 96 mg. %, and on February 13 of 112 mg. %. And yet the creatinine was reported as 13.04 mg. % on the 13th, and two weeks later, on the 27th, 3.22 mg. %. This is something which I find very difficult to explain—the tremendous drop in the creatinine when her urea nitrogen was rising.

Her blood sugar was 156 mg. %. I am told that with a urea nitrogen of 73 and blood sugar of 156, you could probably discount the latter and call it a normal blood sugar. It is quite possible that this is so, because in subsequent blood chemical readings we have no further determination of her blood sugar, and in the protocol there is no mention of treating her for the diabetes, so I take it that this was not considered an important element. With the high blood pressure and the anasarca, and with the urinary findings and the diabetes, I suppose one would almost feel induced to think of chronic pyelonephritis, and possibly the Kimmelstiel-Wilson syndrome. But you will remember her fundi were perfectly normal, and she has had no apparent findings to support this theory apart from one tiny linear hæmorrhage.

The illness was afebrile, for the last month completely so. That of course eliminates a certain number of factors—subacute bacterial endocarditis, for instance, which is rare at that stage without fever.

The presence of intrinsic renal disease as a cause of the whole syndrome would also, I think, be unusual. I am in agreement with the note of the attending physician concerning the possibility of glomerulonephritis. As this was a relatively short illness, and as she had a relatively severe anæmia to be accounted for in such a short time, I think we can exclude glomerulonephritis. I have already noted the presence of normal plasma protein values and I think that a lipoid nephrosis can certainly be eliminated. I therefore do not think it is an intrinsic type of nephritis that we are dealing with.

The next thing is whether or not we are dealing with intrinsic heart disease as the common denominator. Well, if it is cardiac disease it certainly is not a common type, because I don't think I would be asked to diagnose a case of mitral stenosis with congestive heart failure, or anything of that kind. I think probably we must think of what we can eliminate, taking the usual run of cardiac diseases in turn. We should therefore consider: (1) The *hypertensive* type, though not seriously—her fundi were normal. (2) *Rheumatic*—no positive history, and certainly the events occurring did not indicate rheumatic heart disease. She had not been ill in the past, and no rheumatic heart disease had been detected. There was only a systolic murmur after the pericardial friction had disappeared. (3) *Coronary heart disease*—she was severely ill for six months, but there were no coronary episodes. (4) *Congenital heart disease*—again the history does not suggest it. Thus I think we can eliminate the ordinary causes of heart disease, and come to the rare ones.

I think it was Burchell who said that we should not diagnose rare conditions. He was quoting one of the ancients—but of course that does not apply to these exercises! So one would expect that this person had not necessarily only heart disease, but certainly that the heart was involved in some way or other. What are some of the unusual types of cardiac disease with systemic involvement that might produce a syndrome similar to the one under review? I suppose we could always start off with the so-called collagen diseases. We know that: (1) *Lupus erythematosus* can produce a syndrome something like this, even without skin manifestations, but it is also important to remember that she had a relatively high leukocyte count. So I will eliminate that. (2) *Polyarteritis nodosa* may also produce a syndrome something like this, and it is very difficult to eliminate that, but I think I will do so, because of lack of fever and joint and muscle symptoms.

What else remains? It is often said that if the ordinary symptoms of cardiac disease do not fit the diagnosis, it is a good idea to think of the

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pericardium. The pericardium, as you know, can become involved in a number of processes. Firstly, I would say it can become involved by way of a tumour. This may produce the same syndrome as constrictive pericarditis. Nearly all of these cases of *tumour of the pericardium* spread from a local area, but many of them come from another area, such as the kidney, pancreas, and so on, and they can certainly produce the syndrome of constrictive pericarditis. As far as we know, though it is hard to eliminate it, there was no evidence of tumour; but again it is difficult to be sure that she did not have a tumour, because no radiographs were taken to show a tumour in the mediastinal region which might have spread to the pericardium and even to the heart. It is well known also that there are such things as primary myocardial tumours which might spread to the pericardium. I am going to eliminate tumour, because the patient was sick a relatively long time, more than a year I think, although it only says she was "not perfectly well". I am therefore eliminating a malignant tumour.

This brings us to a condition which is less commonly diagnosed, i.e. *constrictive pericarditis*. Did this patient have constrictive pericarditis? I would think that the course of the disease was a little too rapid for this, although she had many of the signs and symptoms that we do get with it. One thing I noticed in the protocol was the absence of any mention of the venous pressure in the neck. It may have been unrecognized, or possibly the information was withheld. At any rate, everything else would point to the syndrome of constrictive pericarditis, not necessarily due to the ordinary type of this disease, in which we may have calcification or a hard pericardial sac which constricts the right ventricle mainly or the left ventricle occasionally, with the usual symptoms of anasarca, marked œdema, dyspnœa, sometimes orthopnœa, and of course enlargement of the liver and sometimes enlargement of the spleen. I feel that the course of this illness, if it were the ordinary type of constrictive pericarditis, was a little too rapid; I mean that her acute symptoms lasted only approximately six months. I think, therefore, that we have still to pick out something else as a probable diagnosis.

One thing I have thought of is *primary systemic amyloidosis*. This is a condition which may last a long time, and which can involve the heart, of course, and the kidney, spleen, liver, pancreas—practically any organ of the body you could mention. When it involves the heart particularly, it has the same effect at times as constrictive pericarditis. If you can imagine the amyloid material in the heart forming constricting bands, preventing not only the filling but also the emptying of the heart, you can well imagine that the symptoms of constrictive pericarditis can be produced by primary amyloidosis. However, it may produce simple congestive failure. She had, you will remember, changes in her urine. The marked congestive failure probably could contribute a great deal to the changes in her kidneys—possibly not all, but then the presence of amyloid material in the kidney could produce the changes and also lead to nitrogen retention. She had a marked nitrogen retention of 134 mg. % on the 27th, a few days before she died, and in my experience I have not seen the nitrogen value so high in ordinary congestive heart failure. The other thing is that her daily urinary output gradually decreased, and towards the end was practically nil.

So we are dealing with a disease which is cardiac and renal, and has existed a long time, and which to my mind was a systemic disease which could involve the heart, lungs, kidneys and many other organs. One of the terminal episodes was the involvement of the lungs. She had what was obviously a pulmonary infarct. That of course might have been due to pulmonary thrombosis. The pericardial friction heard for such a long period of time was of course part of the disease picture also, and even though it lasted a long time, it would not invalidate that diagnosis. As I said before, it is important to remember that this was not an acute pericarditis and she did not have any evidence of fever at any time.

So I think I am left with a diagnosis of primary systemic amyloidosis with involvement of various organs, particularly the heart, the kidney and pericardium. She had pulmonary infarction and pericarditis (sero-fibrinous).

Finally, she died most likely of severe congestive failure from which she had pleural effusion, ascites, marked enlargement of the liver and œdema.

Dr. Todd: Are there any other diagnoses?

*Dr. Douglas G. Cameron:** I would like to sup-

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port Dr. Feeney's diagnosis of primary amyloidosis. I had hoped he would carry on to explain the anæmia on this basis. This was probably due in part to the azotæmia but not entirely explicable on this alone. There might well be amyloid deposits in the bone marrow. I would also like to suggest that the pericardial friction might have been related to the uræmia rather than to direct pericardial amyloidosis.

Dr. Feeney: That is quite possible. But I would much prefer to take the one diagnosis. We have only one report on the bone marrow, taken by sternal puncture, and this stated that granulopoiesis was very active and erythropoiesis normoblastic. As I have said, I cannot make a definite statement of opinion on that, but the bones might have been involved. It is a possibility.

*Dr. Alan F. Fowler:** In considering the creatinine values, we have no figures on the urine output during the period February 6 to 13, when we encounter that high creatinine value. However, after that she was given packed red cells, and it is possible that more urine was excreted after this. This may account for the lowering of the creatinine. In view of the happenings during the anuric phase, I would like to suggest that we are dealing with an obese woman who was a diabetic, that the disturbance of carbohydrate was partly corrected by the weight loss —that she had pyelonephritis with papillitis and uræmia.

Dr. James H. Darragh:† Dr. Feeney's diagnosis explains many features of the case. However, some things remain unexplained, such as the anæmia, the high platelet count, and the asymmetry of the œdema. The latter suggests thrombosis of the peripheral veins, extending terminally to involve the inferior vena cava and the renal veins, and resulting in multiple pulmonary emboli. The high platelet count suggests the condition of primary thrombocytosis with multiple thrombosis in arteries and veins. This would account to some extent for the anæmia, although I am not happy with that explanation.

Dr. Feeney: The only thing a little unusual about thrombosis of the large veins at any time was the absence of a compensatory circulation. I thought of the possibility, but it would be rather unusual for large vein thrombosis to occur without evidence of collateral circulation. Are you thinking of small vein thrombosis?

Dr. Darragh: Small at first, passing on to larger veins and terminating in pulmonary emboli. I would like to suggest a diagnosis of primary thrombocytosis.

*Dr. Leyland J. Adams:** There are just a few thoughts that occur to me. I would agree with Dr. Feeney that the process, whatever it is, is generalized and not primary intrinsic renal disease. Possibly he has overlooked the possibility of chronic gout. No history of gout was mentioned, and the blood uric acid was not given to us. The anæmia certainly was out of proportion to the blood urea nitrogen level. I would agree with the attending physician regarding glomerulonephritis, in view of the anæmia with blood urea nitrogen 73 mg. %. The only query about primary amyloidosis covering the whole diagnosis is that I would expect amyloidosis to cause palpable enlargement of the spleen, as well as hepatomegaly, and I would also expect the œdema to be more of a renal type, with possibly a little more disturbance of the albumin-globulin ratio. I know that the cases we have had of amyloidosis came as a complete surprise, and the clinical picture was predominantly that of the nephrotic syndrome.

Dr. Feeney: You must remember this woman was very œdematous, and it was practically impossible to feel any organs; the spleen was probably large. Reversal of the albumin-globulin ratio is not necessarily part of the syndrome of primary amyloidosis. As I have said before, primary amyloidosis involving the heart may act just like constrictive pericarditis, and certainly would not produce œdema of the face.

Dr. Todd: Are there any other opinions?

Dr. Alec L. Gordon:† I was thinking of lupus erythematosus, and was disappointed when it was described as rather improbable.

Dr. Feeney: One of my main reasons for ruling this out was the high white cell count, which would make it unusual.

Dr. Mills: A point very much against lupus erythematosus is the fact that she was afebrile all the time

CLINICAL DIAGNOSIS

1. Chronic glomerulonephritis.
2. Uræmia.

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DR. NEIL FEENEY'S DIAGNOSIS

Primary systemic amyloidosis.

PATHOLOGICAL DISCUSSION

Dr. Mathews: The post-mortem examination revealed an anasarca with œdema of the lower and upper limbs, over the back and abdominal wall, together with a massive ascites and bilateral pleural effusion. Associated with the clinical uræmic state there was present a fibrinous pericarditis, and in the lungs a terminal bronchopneumonia and pulmonary œdema.

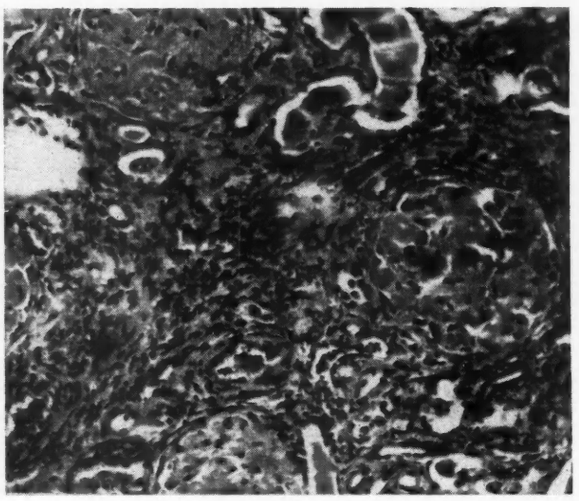

Fig. 1

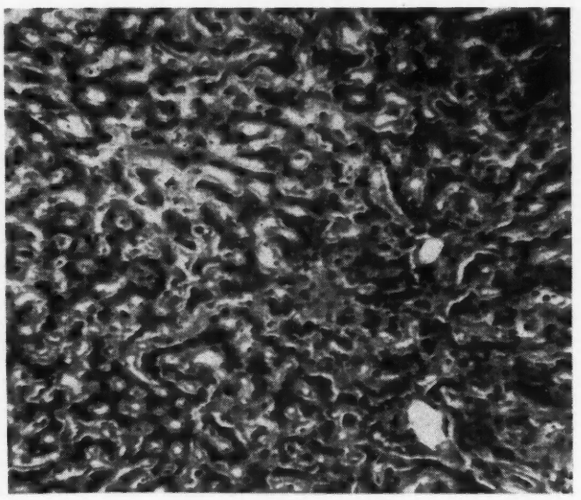

Fig. 2

The kidneys were of the granular contracted variety, red-pink in colour and weighing 85 and 80 g., their appearance being consistent with either hypertension and arteriolonephrosclerosis or chronic active glomerulonephritis. The heart weight was increased to 450 g. There was remarkably little arteriosclerosis and the brain was free of abnormality. The liver weight was increased to 1,980 g.; it had a rather homogenous, chocolate-brown parenchyma. There was a solitary pigment calculus in the gallbladder. The spleen was firm, not bloody or pulpy, and weighed 200 g. No other gross abnormalities were noted, and the diagnosis appeared to be a clear-cut one of either hypertension with nephrosclerosis or of glomerulonephritis and death caused by renal failure.

The microscopic examination revealed a totally different state, and the pathological diagnosis is:

1. *Primary amyloid disease* (applause for Dr. Feeney)—with: (a) marked amyloid glomerulosclerosis and contracted kidneys (Fig. 1); (b) diffuse hepatic and splenic amyloidosis (Fig. 2); (c) lesser amyloidosis of pancreas and adrenal glands; (d) amyloidosis of small blood vessels in heart, pancreas and lungs.

2. The associated conditions were anasarca, fibrinous pericarditis, pulmonary œdema, bronchopneumonia, cardiac hypertrophy and cholelithiasis.

To remind you, primary amyloid disease refers to amyloid depositions in the body not associated with a recognized antecedent or concomitant disease, such as tuberculosis or osteomyelitis or multiple myeloma. In this idiopathic form there is a wide variation in distribution, though most often the latter is essentially vascular and mesodermal. However, in some cases distribution is more like that of secondary amyloidosis, as in this case with kidneys, liver and spleen involved.

Naturally the clinical features are referable to the distribution and extent of the amyloid in the body. Congestive heart failure, simulating other forms of cardiac disease and of intractable nature, is the most frequent, often being associated with clinical evidences of involvement of other body systems, such as lymphadenopathy, hepatomegaly, splenomegaly, macroglossia, gastrointestinal disorders, nephrosis, peripheral neuritis and hypercholesterolæmia.

A nephrotic syndrome is a frequent clinical form of primary amyloidosis, as seen in the present case, though usually having hypotension rather than hypertension associated with it. However, hypertension may be present in a smaller number of cases. Other major clinical

forms of the disease are a primarily hepatic one, or one with macroglossia or polyneuritis as the dominant presenting feature.

A physician: Are the kidneys generally so small?

Dr. Mathews: In secondary amyloid disease the kidneys are more likely to be enlarged. In primary disease they may be small or large, depending upon the amount of amyloid present.

Dr. Rowe: What would one expect the Congo red test to show?

Dr. Mathews: In this case I would say it would probably be negative, firstly because the Congo red reaction given by the amyloid is not a particularly strong one, and secondly because the total amount of amyloid in the body would not be very large.

REFERENCE

1. MATHEWS, W. H.: *Am. J. M. Sc.*, **228**: 3, 1954.

REVIEW ARTICLE

THE TREATMENT OF THERMAL BURNS*

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THE BURNED PATIENT presents many problems, each of which may have more than one solution. New methods of local and general treatment have, in the past few years, made it possible for the surgeon to choose his methods of treatment for each patient. This paper presents our choices in the handling of the problems of thermal burns.

GENERAL TREATMENT

When a severely burned patient is brought to the Emergency Department, an intravenous infusion is started at once, usually by stab but if necessary by cut down. Blood is taken at this time for cross-matching and typing and for hæmoglobin estimation. The necessary sedative is given intravenously and may be required in considerable amounts. Morphine will be found very satisfactory and should be given intravenously in one-quarter grain (16 mg.) doses until the patient states that he feels better and that the pain is relieved. This state is not often achieved until the pupils are small, and may require as much as a grain of morphine within a period of 15 minutes.

The intravenous infusion is begun with Dextran, and 1,000 c.c. is routinely given in the first two hours. This allows time for the surgeon to turn his attention to the emergency local treatment of the burned areas before transferring the patient to the ward.

The control of burn shock by estimating fluid requirements from a formula has not been used in this series. It is felt that a better estimation of the patient's fluid requirements can be gained by following up the hæmoglobin level and the urine volume and specific gravity. Hæmoglobin levels are estimated every hour for the first few hours and then every two or three hours until the first 24 hours have passed. Thereafter, the frequency of estimation depends upon the clinical state of the patient and upon the urine output. For this careful observation of urine volume, a catheter is necessary. During the early stages the volume and specific gravity of the urine should be measured every two or three hours, since the onset of hæmoconcentration may be manifested by a rising specific gravity and a decrease in volume before a change occurs in the hæmoglobin level.

Before going further, there are one or two difficulties in this method of gaining information which should be recognized. In the aged patient, kidney function may be far from normal. The loss of circulating fluid may not be reflected by the increase in the specific gravity of the urine or by any decrease in volume. Also, if the burn is very severe, blood may be hæmolyzed, producing a bloody urine which by precipitation in the tubules may seriously interfere with kidney function. Finally, one must consider the "shock kidney" where the oliguria is not a reflection of low circulation volume. However, these difficulties have not presented themselves in any of our cases.

Using then the hæmoglobin level and urine output and specific gravity, the intravenous therapy is varied as required. The introduction of Dextran would seem to be the greatest advance in recent years in the treatment of burn shock. With it, the control of hæmoconcentration is simple. Hæmoglobin levels which may have gone from 90 to 130% within two hours can be returned to below 90% within an hour to an hour and a half with 1,000 c.c. of Dextran. There have been no reactions or unfavourable results, probably because about 70% of it is excreted in the urine within the first 24 hours. However, hæmoconcentration is not the whole problem. Although it can be controlled by relatively modest amounts of Dextran, the patient requires in addition a large fluid intake. He will store large volumes of water in the burned areas, robbing the remainder of the body to do so. This fluid can be given in part by mouth if the patient is able to take it, and intravenously in the form

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of glucose and saline or glucose in distilled water. It is here that the observations made upon the urine are helpful, especially after the first two days when the patient begins to excrete the water stored in the burned areas. A moderate diuresis indicates that the fluid intake must be decreased.

There is one more facet to be considered as regards intravenous intake. Since the Dextran given to control hæmoconcentration is eliminated from the body rapidly, it should be replaced with whole blood, especially where the systemic reaction of the patient to the burn has been marked. A severely burned patient should be transfused with whole blood in amounts about equal to the volume of Dextran given to control hæmoconcentration.

This method of management of the intravenous intake has proved satisfactory. However, the calculation of fluid requirements by a formula has definite merit. It has also drawbacks which must be understood. The formula of Evans[1] is probably the most useful and most widely used. It requires a rather accurate assessment of the areas of second- and third-degree burn and of the patient's weight in kilograms. The fluid estimated from this formula is given to the patient in the first 24 hours, subject to certain reservations. The method should not be used in patients over 50 years of age. It does not apply to burns of over 50% of the body surface. Estimations in excess of 10,000 c.c. of fluid in the first 24 hours should be disregarded, as this amount would seem to be the maximum desirable under any circumstances. A less tangible disadvantage of using a formula is a tendency to minimize the importance of other methods of control, assuming that the formula will accurately fulfil the patient's requirements. This is not always the case and hæmoglobin estimations or, if preferred, hæmatocrit readings and observations on the urine should be used as a check upon the formula.

As the patient improves, it is possible to satisfy more and more of his fluid requirements by mouth, and usually after the first three or four days the intravenous infusion may be discontinued. After the first week, the hæmoglobin level frequently begins to drop and this fall may be marked. If untreated, it continues until healing is well advanced. It is necessary to follow up the hæmoglobin level at weekly intervals after the first week and to transfuse the patient intermittently as may be required.

Here, a few words should be said about the prophylaxis of infection and of loss of weight. All patients are treated with oral penicillin or intramuscular Dicrysticin (penicillin plus streptomycin). Infection by ordinary pathogens has not been a problem but contamination with *Pseudomonas pyocyanea* is still troublesome. However, this infection does not usually appear until about the fourth week and, if at all possible, this complication is avoided by having the burned areas covered with skin grafts before that time. Once established, this infection is difficult to eradicate.

When there have been third-degree burns of the ears or the nose, the development of a chondritis produces an unhappy situation. Once established, there seems to be little that can be done to bring the process to a halt. The cartilage is liquefied and cast off, so that the structure supported by it collapses and a permanent deformity results. It is wise to treat burns of the nose and ears with the greatest respect. Crusts which develop should not be disturbed in any way. The involved areas should be covered with sterile vaseline or an antibiotic ointment to discourage any attack by pathogenic organisms. Chondritis has not developed in any patients in this series treated from the beginning, but has been a complication in patients referred late for grafting.

The prevention of loss of weight is extremely difficult. This loss of weight is probably due, not to the loss of protein into the dressings as formerly thought, but to a rise in the basal metabolic rate and to increased protein catabolism. Recently this was studied by Cope[2] and his associates and they noted elevations in the basal metabolic rate to 130 or 160%. The elevation is thought to be due to the tremendous cellular activity required in the healing of the burn, and it does not return to normal until healing has been completed. A great increase in protein catabolism has been noted by Blocker[3] and his associates, using radioactive methionine. These changes help explain the progressive and inevitable loss of weight that occurs during the treatment of a burned patient. It is our practice to offer a diet of 4,000 calories daily so that the intake may be measured accurately by subtracting what is refused from the total. It should be noted that two patients who come to mind, both of whom were able to take all of 4,000 calories daily, both lost weight.

LOCAL TREATMENT

The emergency local treatment of the burned areas is not considered until intravenous therapy has been begun. The thorough débridement of former days, the washing and even scrubbing with antiseptic solutions, are becoming less popular. It is our feeling now that, by and large, the less harm done the better. Hanging tatters of burned skin are of course cut away. Gross dirt, ashes and bits of burned clothing are washed off with saline or Cetabrom. Adherent substances such as tar are best left alone.

When this is done, a choice must be made between open and closed methods of treatment and it must be decided, if an open method of treatment is elected, whether to aid the formation of an eschar with aluminium powder.[4] Our experiences have led to certain conclusions about the use of each method. The open method,

especially when aluminium powder has been used, produces a pliable eschar and the early management of the patient may be easier than when dressings are used. However, aluminium powder forms an opaque eschar in second-degree as well as in third-degree burns. From second- or third-degree burns it will not be separated until nearly 28 days have passed. This delays the beginning of skin grafting. At the time of the emergency treatment, often no decision can be made as to what is second degree and what is third degree. After the aluminium powder has been applied, this very necessary information cannot be gained until the eschar separates, thereby delaying treatment, or by excision which may be unnecessarily wide and deep because of the opacity of the eschar. For this reason, open treatment is not desirable on the hands. The presence of an eschar requiring excision might be a disaster because of the danger of exposing joint capsule and tendon during its removal. In this situation, it might be tempting to await the separation of the eschar, but this would delay grafting so long that good function of the hand might never be regained.

There is another objection to the open method of treatment in extensive burns which has been forcefully brought out by Beech,[5] who found that he was unable to continue the open treatment in severe burn cases as the patients complained so bitterly of cold that they had to be covered. This observation is most timely and certainly should produce some second thoughts about the advisability of being prepared to treat many burns in the event of disaster by the exposure method only. A burn bed is necessary and in a disaster it would be difficult to find a sufficient number of burn beds for immediate use.

On the other hand, the treatment of a localized burn situated on the trunk or thigh is very nicely carried out by the open method with aluminium powder. In such a case where the burn is confined to one area, the general treatment of the patient may be carried on without any attention to dressings. When the general condition of the patient permits, excision of the eschar may be undertaken.

With these considerations in mind, the open method of treatment is used only on those burned areas which are almost certainly of the second degree. The open method may also be elected in the treatment of an obvious third-degree burn which is relatively localized.

The closed method of treatment is favoured for the more extensive burn. Here there are large body areas of second-degree and possibly third-degree burns, and it is desirable to know as soon as possible exactly what is third degree and what is second degree. It would be highly undesirable to have to excise too widely and too deeply an opaque eschar before this information could be gained, thereby increasing the extent of full thickness loss.

In the closed method of treatment, it is no longer suggested that compression be applied as well as closure of the wound by dressings. The so-called pressure dressing loses its pressure effect in a very short time.[6] Large series of cases treated by the open method exclusively have demonstrated that the absence of any compression dressing is not harmful.[7]

The method of applying the dressing in closed treatment has undergone some simplification. On the face, a dressing is not applied but a closed treatment is maintained nonetheless by the application of Jelonet or vaseline. On the hand, Jelonet and amputation pads are used and the hand is fixed in the position of function. Similarly, Jelonet and pads held in place by flannelette bandages are used on the extremities. Large dressing pads measuring 18 by 24 inches greatly facilitate the dressing of the trunk. When the Jelonet has been applied, one pad in front and one behind is all that is necessary to complete the dressing of the trunk. These are held in place with an abdominal binder and breast binder. The use of burn gauze between the Jelonet or vaseline gauze and the dressing pad is unnecessary and undesirable as it greatly increases the time required to complete the dressing.

In these larger burns treated by the closed method, it has been our practice on the tenth day to change the dressing for the first time in the operating room under basal anæsthesia and for this rectal thiopentone (Pentothal) has been used by our anæsthetists. At this time, all the obviously necrotic tissue is removed surgically, care being taken to keep the instruments as superficial as possible. If there is considerable discharge from the burned areas, the redressing is accomplished with dry pads only. If, however, there is very little discharge and the burned areas are dry, a layer of Jelonet or vaseline gauze should be applied and then covered with dressing pads moistened in Hygeol or saline.

In another 48 hours a similar débridement and dressing is done. The removal of the dressing helps the débridement, as much of the necrotic material sticks to the pads and is removed. It has been necessary to repeat this three or four times before grafting could be undertaken. This is really débridement and not excision, so that the grafts are placed on a tissue which is just beginning to develop some granulation and which will, in the future, maintain the characteristics of subcutaneous tissue. It would seem to be more tedious than a radical excision in one stage, but it is safer and the end result is better because of the final appearance and function of the graft.

It can be seen that this method of management does away with painful burn dressings which rapidly demoralize the patient. The frequent dressing of extensive burns to prepare them for grafting, besides being painful, is a

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slow way to achieve a clean surface. In addition, the chance of infection is increased many times and the removal of slough cannot be assisted by sharp dissection.

When this method of management has been carried out, skin grafting can be begun on the 18th day; when the hands are involved, they should be grafted first. At this time, some of the burned areas may not be ready to receive a graft. These are further débrided and again dressed. However, all the burned areas should be débrided or excised by the 21st day and all major areas of burn, no matter how extensive, should be grafted in six weeks provided that the patient has sufficient donor area to permit it. In some cases the completion of grafting in six weeks requires the use of the same donor site two and even three times. This can be done if the grafts removed are kept thin, so that healing of the donor site will take place in eight to ten days.

Occasionally, the problem of a very small donor site in relation to the area requiring cover may arise and in these cases we have used homografts. These are not permanent but do provide a temporary cover and the donor site of the patient is given time to heal so that it may be used again.

The dressings can be removed after the skin grafting about seven days from the time of their application. This can be done without anæsthesia, as there is little discomfort. The dressings are changed daily until the patient is able to sit up and help himself move with some facility. When this is achieved, treatment is continued, using the burn bath at the time of the daily dressing. The burn bath is now comfortable and pleasant and not at all the ordeal for both patient and dressing nurses that it would have been if used before skin grafting had been completed.

We might now return to the consideration of further treatment of the localized third-degree burn which had been treated by the open method. As it is desirable to begin grafting at the earliest possible moment, excision of these burns will be necessary. This is done when the patient's general condition permits, in order to advance the date on which grafting may be begun. This excision can be done in two ways. Where possible, excision down to fascia with the immediate application of a skin graft results in prompt healing. Where this might produce deformity, the excision may be kept much more superficial than the fascia. However, in such a case the œdematous fat is not a good bed for a graft, so that dressings for 48 hours or so are required for the formation of granulation tissue on which the graft may be set.

Occasionally, it may be decided, in a patient who has suffered a localized burn of obvious third degree, to excise it down to fascia as an emergency treatment and graft it. This has been done on three occasions in this series. In one case the burn was closed with a rotation graft, which gave an excellent result. Two were covered with split grafts. Both grafts took completely and in ten days the patients were healed, but the end result was less than desirable because of the ugly, depressed appearance of the area.

RESULTS

Our series comprises 257 cases, treated during the period from 1945 to 1954 inclusive.

Table I shows the cases divided into groups by percentage of body surface burned. It will be noted in the 5% column that both patients died of strokes and not of burns. In the 10% column there is one death but that patient was 79 years of age and died of pneumonia two weeks after the accident. In the 20% column there are two deaths, both patients being over 60 years of age. In the subsequent columns it can be seen that old age gives a very poor prognosis. In the bottom row of figures, the increasing importance of body area burned is evident regardless of age. It can be said from these figures that half of the patients with a 50% burn will die and two-thirds of those with a 60% burn will die. All over that will succumb.

TABLE I.

Area burned.....	Less than 5%	5%	10%	15%	20%
No. of patients....	54	104 (79S) (58S)	53 (79P)	13	11 (60) (90)
Area burned.....	25%	30%	35%	40%	45%
No. of patients...	1 (93)	4	2 (86)	2	2
Area burned.....	50%	60%	80%	85%	90%
No. of patients....	4 (52) (74)	3 (30) (74)	2 (58) (20)	1 (49)	1 (55)

Numbers in brackets represent ages of patients dying.
S—Died of stroke.
P—Died of pneumonia two weeks after admission.

A few words should be said about morbidity. Accurate morbidity figures in this centre are difficult to arrive at because many of the patients included in this group had been burned some time before being sent here for treatment. There were many cases of patients who had been burned three weeks before admission here and a few who had been burned some months before being admitted. However, it may be said that where a patient requires skin grafting of a large burn, even though all major grafting is completed in six weeks, he will require three months in hospital and probably three months' convalescence after his discharge from hospital before his return to work.

Our late results have been good. There have been only 13 cases of late deformities, such as contractures, resulting from treatment carried

out wholly in this hospital. The incidence of late deformity is very much increased when grafting has been delayed. It should be stated also that late skin grafting is much more difficult because of established infection and because of the debility of the patient, which increases steadily and inexorably as long as the burned areas remain unhealed.

An unusual complication which materially altered the late result occurred in a patient 21 years of age. He suffered a flash burn of 50% of his body surface, much of which was third degree. In the third week of treatment he began to run a very high fever, his temperature rising on two occasions to 106° F. and daily for a couple of weeks to 105° F. He complained of pain everywhere, but in particular of pain in his right leg. Clinical examination, blood cultures, and radiographs of his right hip gave us no information. In spite of this fever, skin grafting operations were continued, and when healing was nearly complete he was allowed up. As he began to walk he again complained of pain in his right knee and hip and again radiographs were taken. This time a septic arthritis of his hip was seen, which had not been recognized and had now proceeded to destruction of the joint. It remained only to treat this by immobilizing it in good position so that the rapidly advancing fusion should cause as little disability as possible. Some six months after discharge from hospital, he returned for examination complaining that he could not now open his mouth. Clinically, there was a fusion of temporomandibular joints. He was admitted to hospital and the heads of both mandibles were resected. The result of this was excellent. It was felt that the diagnosis here was again septic arthritis. Three months later, the patient was again admitted to hospital complaining of swelling and pain in his right elbow. Here again the diagnosis was septic arthritis. Cultures taken from each joint were sterile.

It will be obvious from the foregoing remarks that the treatment of thermal burns is difficult and time-consuming. The morbidity is long and the result of treatment is sometimes less than desirable. In presenting these views on the treatment of thermal burns, I do not wish to suggest that there is not yet room for great improvement.

SUMMARY

1. A method of management of the general treatment of the burned patient is presented, emphasizing the use of clinical controls rather than the use of a formula.

2. Local treatment is discussed. It is concluded that the open method of treatment is not desirable, on the hands or face particularly, and probably should be used only when the burned area is localized to the trunk or thigh or similar area and is small in size. The open method also may be used when the burned area is obviously of second degree.

3. For all extensive burns, the closed method of treatment is preferred. The results are presented and the mortality and morbidity figures are discussed.

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RHEUMATIC FEVER PNEUMONITIS

Autopsy material from patients dying of rheumatic fever at the Milwaukee Children's Hospital, the Milwaukee County Hospital and the Veterans Administration Hospital and some private patients has been studied by M. J. Lustok and J. F. Kuzma (*Ann. Int. Med.*, 44: 337, 1956). In 35 instances rheumatic fever pneumonitis was discovered, and the pathological material was reviewed. The clinical aspects of these cases were studied in retrospect.

The diagnosis of rheumatic fever pneumonitis is rarely made ante mortem. The seriousness of this complication of rheumatic fever warrants clinical interest directed toward more successful management. This is predicated on more frequent recognition of rheumatic fever pneumonitis during the acute phase of the disease.

Clinical diagnosis of rheumatic fever pneumonitis is warranted when there is:

A. Disproportionate respiratory distress with severe cough, chest pain, cyanosis and hæmoptysis not relieved by oxygen and the customary supportive measures.

B. Evidence of carditis, but not of sufficient severity to explain the pulmonary findings, in the presence of prolonged high fever and negative blood cultures which do not respond to salicylates.

C. Chest x-ray finding of increased perivascular markings arising at the hilus and progressing to nodulation, confluence and massive consolidation with relatively clear apices and bases.

Gross pathological changes are: rubbery consistency, various dark hues of focal hæmorrhages, fine granularity and spotty vesicular emphysema. Histological changes are: alveolar hæmorrhages, necrotizing alveolitis, hyaline membranes, alveolar lining cell proliferation, organization of exudate, fibrinoid necrosis of bronchiolar lamina propria, and arteritis.

The treatment, in this series, was based upon the consideration of the working diagnosis. This included the usual salicylate management of acute rheumatic fever; the supportive measures for suspected congestive heart failure, such as oxygen, digitalis, salt restriction and mercurial diuretics; and antibiotic therapy where subacute bacterial endocarditis was suspected. The unfavourable clinical course was not altered by this management. Failure of oxygen to relieve the respiratory distress was notable.

In one case, where the diagnosis of rheumatic pneumonitis was suspected, intravenous ACTH was employed. In this instance the fever subsided, the sedimentation rate became normal, the heart became smaller and signs of carditis seemed to regress, but the respiratory distress increased, and x-ray evidence of rheumatic pneumonitis was particularly extensive. The pathological changes were more strikingly developed in this case than in the remaining cases in their series that had not received ACTH therapy. The severity of the case probably rendered ACTH ineffective.

No suggestion as to effective clinical management of rheumatic fever pneumonitis can be derived from this study. The ante-mortem recognition of this complication of rheumatic fever is the basic prerequisite for evolution of successful therapy.

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PSYCHOPHARMACOLOGY

The April 28 issue of the *British Medical Journal* contained a series of articles and an editorial on the use of new drugs in psychiatry, which stressed again the intricacies and pitfalls of psychiatric research, and the unfortunate impact of the unleashing of poorly verified information on the general practitioner and the general public. The recent deluge of reports on "new drugs" in psychiatric therapeutics sometimes gives the impression that many investigators are trying too hard to get into the show of priority and proclaim "revolutions". In the above-mentioned journal, Sargant makes this point clear by stating: "Backward specialities in medicine, like backward nations, have much more spectacular revolutions when they finally happen. This has certainly been true in psychiatry in recent years." However, there are very few "revolutions" in medicine. In psychiatry, like any other branch of medicine, the advances are gradual and piecemeal, and the research should be carried out in the sobriety of scientific honesty and shaded from the light of publicity. Sargant points out that the present aspect of mental hospital wards, with tranquillized patients in attitudes of silence, and with drooping heads and salivating mouths, is not much different from the atmosphere of 30 years ago when bromides were introduced with similar "revolutionary" results. This author continues to discuss some of the major "tranquillizers." Bromides, according to Sargant, if used with adequate precautions, are still very useful in the treatment of many neurotic states. He deplores the fact that the bromide toxicity, which usually occurs in the aged and the arteriosclerotic, has unduly alarmed the clinicians. He finds barbiturates most useful in emergency "front line" situations, and as a psychiatric first aid in general practice. He prefers barbiturates to chlorpromazine and reserpine in treatment of neurotics. Even though many neurotics may be unable to do without barbiturates, he thinks it is better to have relatively addicted but functioning individuals than non-addicted non-functioning ones. The same opinion is shared by Garmany, in another article in the same issue. Garmany reports on 644 cases of anxiety states where he finds amylobarbital or its sodium salt more effective than any other drug. He recommends chlorpromazine as a synergistic medication to the barbiturates, and reports discouraging results with reserpine.

Sargant claims that chlorpromazine and reserpine have a limited effectiveness in the psychoses, and because of their serious side-effects, particularly jaundice and depression, he condemns any enthusiastic advertisement about the use of these drugs in general practice. He thinks that chlorpromazine and reserpine are no substitutes for other somatic treatments if these are used judiciously. He believes that in some instances chlorpromazine may initiate chronicity after an initial, seeming alleviation of an acute state. Sargant dismisses mephenesin and methylpentynol (Somesin) as mild sedatives of little consequence.

Two of the important new stimulants, namely Frenquel and Meratran, are reported by Sargant, Begg and Reid, and Houston. Sargant confirms the opinion of other authors that Frenquel is no substitute for electroconvulsive therapy (E.C.T.) or insulin, and is useful only as an adjuvant to E.C.T. in treatment of depressions. According to Begg and Reid, Meratran is beneficial in reactive depressions without anxiety and hysterical or obsessional traits. Meratran has no effect on endogenous depressions, and actually may aggravate the symptoms. It increases a pre-existing anxiety state, exaggerates the obsessional traits and in many instances disturbs the sleep pattern. The authors confirm Fabing's observation that where E.C.T. is the correct treatment Meratran should not be used. It is to be noted that Begg and Reid find Meratran of some use in five cases of post-leukotomy apathy and lethargy.

Houston has used Meratran in a carefully selected and controlled group of 20 schizo-

phrenics, and has found no significant changes attributable to the drug. He cautions that a mere focusing of attention and routing in many instances has therapeutic results.

Another new tranquillizer, namely benactyzine (Suavitil), is reported by Raymond and Lucas. Initially Suavitil was found by Jacobsen and Sonne (1955) to have a normalizing influence on rats rendered tense and immobile in conflict-inducing situations. Raymond and Lucas state that the drug is moderately effective in anxiety neurotics complaining particularly of tension, but has no influence on psychotic states, depressions, obsessional neuroses and hysteria.

Finally an editorial in this issue concludes that none of these drugs "can be looked upon as a satisfactory stand-by in the treatment of minor but most troublesome and often incapacitating anxiety states of general practice". Agreeing with this remark, we should like to note further that in the psychoses, where chlorpromazine and rauwolfia derivatives find their most effective field of application, their action is not uniform, not always predictable and dramatic and that above all they have no over-all curative effect.

It is of interest to point out—as does Sargant—that in North America more dramatic results are obtained than in Europe with the new drugs. It is ironical too that chlorpromazine, which still is the most effective of the tranquillizers, first appeared in Europe with little uproar, reached North America and caused a public uprising, and now our European colleagues, reconsidering the problem, suggest caution in the interpretation of our results, and a more tranquil attitude in relation to any new tranquillizer! H. AZIMA

SILO-FILLER'S DISEASE

The post-war years have seen a period of great expansion in the Canadian industrial economy; nevertheless farming and agriculture still remain a basic means of livelihood for a large proportion of the population of this country today. As many of our colleagues in rural areas will testify, there are hazards associated with the occupation of farming which are perhaps not at first readily apparent to the city dweller. Disease of animals communicable to man, accidents associated with moving machinery, insecticide and fertilizer intoxication together with a wide variety of dermatoses are not infrequent causes of morbidity and occasionally death amongst farm workers.

Delaney[1] and others have recently reported a hitherto unrecognized risk to which agricultural workers may be frequently exposed. They describe two cases of gaseous poisoning, which occurred in men engaged in loading silos with freshly chopped corn silage. The authors present information on the production of gases and the chemistry of silage fermentation. The toxic agent is thought to be nitrogen dioxide (NO_2). This gas is heavier than air and consequently tends to gravitate through the chute to the floor of the silo room; its colour is dependent on its concentration and ranges from yellow to brownish red.

The clinical picture of poisoning with nitrogen dioxide is not new. It has previously been observed following burning of nitrocellulose roentgenograms in the presence of an inadequate supply of air and also from the effects of explosives made of nitrocellulose during World War I. Following inhalation of the gas the symptoms may vary from slight expectoration of a rusty coloured sputum to those of a severe pulmonary œdema. Chest radiographs show a type of nodular infiltration throughout all lung fields similar to miliary tuberculosis; extensive pulmonary œdema, bronchopneumonia and purulent bronchitis are found at autopsy.

Two of the patients engaged in ensiling and described by Delaney and his co-workers had symptoms of an acute respiratory infection and also complained of a feeling of constriction in the chest. In one case, despite full supportive and antibiotic therapy, death ensued in six days. Necropsy revealed the cause of death to be extensive pulmonary congestion and œdema. It was subsequently established that this man had had several previous incidents of a similar nature, which in each case followed work in the silo. On one occasion at least he had been ill for two weeks and was considered to have been suffering from a virus pneumonia. Whereas in the fatal case a two-week period of fatigue preceded the onset of the condition, in the second case reported there were complaints of cough, shortness of breath, expectoration of brownish sputum and substernal pain for a month before the patient was hospitalized. Chest radiography initially revealed an extensive miliary mottling which after a further period of four weeks showed almost complete resolution.

The death of chickens, pigs and cattle following exposure to yellow silage has been noted by veterinarians. It has also been observed that the more mature the corn the less is the quantity of gas likely to be produced, and fortuitously the production of gas ceases within a few days. The final silage material is innocuous and no dangers are associated with handling it or following its

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consumption by animals. Although the association between the attacks of pulmonary œdema and ensiling under closed conditions has not been irrefutably established, the connection between the two would appear to be much stronger than merely coincidental and the potential hazards of corn silage production are worthy of wider promulgation. J.D.M.

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LABORATORY DIAGNOSIS OF POLIOMYELITIS

There is a real need for a simple, rapid and cheap method for the laboratory diagnosis of poliomyelitis. The discovery by Enders *et al.*[1] that poliomyelitis virus would grow in cultures of human or simian tissues *in vitro*, gave hope that this long-awaited test would soon become available.

Two types of diagnostic test are in use: isolation of virus and demonstration of antibodies. The virus can be recovered from the stools of 80-90% of paralytic cases, and is extremely rare in normal people in North America. The finding of virus in the stools is, of course, insufficient to establish a diagnosis of poliomyelitis; this laboratory result must be interpreted by the clinician in the light of the clinical findings. This is exactly the same procedure as is followed with any laboratory test. Poliomyelitis virus can be isolated and identified quite rapidly by using tissue cultures, in under a week in many cases. The technique is, however, expensive and exacting and therefore cannot be universally employed.

For this reason, many workers are attracted to the serological method of diagnosis. Unfortunately since such tests, to be definitive, depend on the demonstration of a rise in titre of antibodies in convalescence, they only achieve a retrospective diagnosis. Two techniques, serum neutralization and complement fixation, have been used for several years. Neutralization tests take about one week to perform and enable a diagnosis to be made in only about 50% of otherwise proven cases. This is because the antibodies are often present in high titre by the time the patient attends the physician. Ward[2] has recently reported that if the amount of virus in the neutralization test is increased tenfold, diagnostic rises in titre are more frequently recorded. The complement fixation test is much cheaper and more rapid. It is, however, little better than the neutralization test for diagnostic purposes. This is because the antibody responses are rarely confined to one type. Several modifications of the technique, using purer antigens and smaller amounts of complement, have been tried to increase the sensitivity and specificity of the method. Melnick[3] holds that this is the best diagnostic method, but this has yet to be generally confirmed.

Recently Wilson Smith *et al.*[4] have described a new technique for detecting antibodies to poliomyelitis. Belyavin,[5] working in the same laboratory, has devised a flocculation test for influenza virus, and it has now proved possible to adapt this technique for use with poliomyelitis virus.

This flocculation reaction is type specific, and can be performed rapidly and easily. The flocculation is as easily visible as an ordinary bacterial agglutination reaction. This is an important advance, not only because of possible applications to diagnosis, but also for the investigation of the antigenic structure of the virus. So far the method has only been demonstrated with types 1 and 3 viruses. Success with type 2 is likely, when more concentrated preparations become available. The virus used was high titre tissue culture fluid concentrated approximately 38.5 or 77 times by means of an ultracentrifuge. Such a simple test would be ideally suited to small, non-specialized laboratories, but a living virus antigen is not ideal for general distribution. It may well prove possible to use inactivated virus, since from a consideration of the size of the virus and the infectivity of the preparations used, it seems that inactive material must have contributed to the visible particles.

At present the best method of establishing the diagnosis of poliomyelitis is isolation of the virus from the stool. However, work continues in the hope of improving the methods of serological diagnosis.

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APPLICATIONS OF BLOOD GROUPS

In the 16 years since the discovery of the Rh factor many new blood groups have been found and new additions made to the older systems; at the present time over half a million different combinations can be recognized in nine systems or families which are, in the order of their discovery, ABO, MN(Ss), P, Rh, Lutheran, Kell, Lewis, Duffy, and Kidd.

Extensive family studies have shown that all these systems follow the regular pattern of the Mendelian laws. This constancy has led to the application of blood groups to many problems involving identity such as the exclusion of paternity or of maternity, cases of alleged inter-

change of infants, distinction between monozygotic and dizygotic twins, and even distinction between two individuals. Forensic applications are the grouping of blood or seminal stains, fragments of skin, and of saliva on cigarettes or stamps. Not all the blood group systems have been studied in sufficient detail for use in these fields of investigation nor are all the necessary antisera freely available or of sufficient potency to give the needed reliability, but using those tests that are practicable Allen, Jones and Diamond[1] calculate the approximate chance of exclusion when a man is falsely accused of paternity as 53%, of parentage in cases of interchange of infants as 79%, and of identity between two unrelated persons as 99%.

These and other applications of blood groups, including the use of blood tests as circumstantial evidence of parentage, are reviewed in a recent report of the Committee on Medico-Legal Problems of the American Medical Association.[2] Unfortunately this report is not as easy to follow as an earlier report from the same committee,[3] because of a predilection for nomenclatures that have not received universal acceptance.

The main objection to the present report is the choice of the Wiener Rh-Hr notations as the sole nomenclature for the Rh blood group systems. This action is surprising because most blood group workers regard the DCE nomenclature of Fisher and Race as the "best available representation of the genetical situation,"[4] and such an authority as Levine,[5] for example, finds that for lawyers and court officials, exclusion or no exclusion is best expressed in these terms.

Each of these notations for the Rh system was originally designed to express a genetic hypothesis; the essential schism between the two theories is over the academic question of "whether or not the three allelomorphic sites are within or without the boundary of one gene"[6] and need only concern those interested in genetics. What is important, however, is the choice of a terminology which will provide a simple and exact expression of the specificity of Rh antibodies and a correspondingly clear picture of their reactivity as well as easy visualization of the structure of genotypes—these the DCE notations provide; most scientific papers use this terminology and the majority of reference books on the subject of blood groups make only passing reference to any other.

In view of the almost universal acceptance of the DCE notations they cannot be omitted from any authoritative review: they are the only truly international symbols. One is therefore tempted to say of this committee's feelings on nomenclature, "Caveat Lector"—Let the reader beware!

B.P.L.M.

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THE JOURNAL OF PSYCHOSOMATIC RESEARCH

Published from London, England, as a quarterly, a new international journal devoted to psychosomatic medicine has made its bow to the service of research. Unlike its older contemporary *Psychosomatic Medicine*, the *Journal of Psychosomatic Research* is not the official organ of any sponsoring society or association, but an independent journal newborn from the union of a determined and progressively minded psychiatrist *cum* neuropathologist, Denis Leigh, and a sympathetic and enlightened publishing house, Pergamon Press of London. For accoucheurs the new journal has the editorial services and enthusiasm of Groen of Amsterdam, Rees of London, Wretmark of Lund, and Wolff of New York, while for midwifely counsel advisory board members stem from Canada, Italy, Spain, Sweden, Denmark, Norway, Germany, Britain and the U.S.A.

The policy of the new journal is clearly stated in the editorial of its first (February 1956) issue. It is that the ultimate understanding of the problems of psychosomatic relationships lies in the "careful framing of hypotheses and their testing by well-planned experiments". To this end editorial policy will seek to emphasize the critical importance of new methodologies in bringing scientific light to the many shades of darkness enshrouding so much that psychosomatic medicine stands for today. The contents of the journal's first issue bid fair to consolidate these policy aspirations, for the contributions range from a discussion of methods currently available for the investigation of peripheral vasomotor activity to original work relating anxiety to a number of cardio-respiratory co-ordinates, to the E.E.G., and to water metabolism. Other contributions employ socio-epidemiological and projective psychological approaches, while the scope of specific diseases considered in these varieties of ways is indeed a rich one. Particularly interesting is a report by Dekker and Groen in which attacks of bronchial asthma could be predictably evoked in suitable patients by recalling significant emotional events or life situations to them.

J.W.L.D.

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Medical News in brief

PARKINSONISM IN THE AGED

Patients over 60 with Parkinson's disease are apt to become extremely sensitive to the commonly used drugs, such as belladonna, atropine and synthetic drugs of the Artane type. In making this statement, Schwab *(J. Am. Geriat. Soc.,* 4: 491, 1956) points out that the sensitivity often follows a pattern. The patient can usually take the medicine in the morning without too much difficulty but a dose taken in the evening induces confusion and hallucinations. In addition, the drugs tend to produce urinary retention or constipation, and the total amount given may have to be cut down to as much as a half or a quarter of that given in middle-age.

METACORTANDRACIN IN MULTIPLE SCLEROSIS

In a French hospital for chronic internal medical conditions, 56 patients with multiple sclerosis, mostly of duration between five and 20 years and never in an early stage, were treated with metacortandracin in doses of 20 mg. or less daily. The drug was given by mouth and seldom gave rise to side-effects. After five months the authors are of the opinion that metacortandracin was of definite benefit in a proportion of cases. Of 56 patients treated, 26 did not respond, five had treatment stopped, and two died, but 23 showed improvement in varying proportions and in some cases sufficient to permit of considerable rehabilitation. Effects of the drug appeared to include great improvement in general condition, with the consequent healing of bedsores etc., an improvement in the mental state, diminution in contractures and motor power recovery. —*Presse méd.,* 64: 1005, 1956.

PROMETHAZINE FOR PINWORMS

One hundred patients infested with pinworms were given a single oral dose at bedtime of promethazine, 125 mg., and the results were studied by use of cellophane tape swabs taken 10 days or more after treatment. Of the patients, 97 were freed of infection by this single dose, and in no case was a serious toxic reaction observed. Promethazine (Phenergan) is therefore recommended as a non-toxic and cheap method of treating pinworm infestation.—Avery, *J.A.M.A.,* 161: 681, 1956.

ULTRASONIC RADIATION IN THE TREATMENT OF EPICONDYLITIS

Ultrasonic radiation applied under water to the entire extensor area of the forearm is recommended by Aldes *(G.P.,* 13: 89, 1956), particularly in combination with local injection of hydrocortisone, in the treatment of epicondylitis of traumatic origin. In 126 cases, Aldes obtained the best results by this combined method.

GASEOUS DISTENSION OF THE STOMACH

Dr. Konar and his associates from Calcutta, India, *(J. Indian M.A.,* 26: 257, 1956) record experiments in artificial gaseous distension of the stomach. They introduced a Ryle tube into the stomach through a nostril and then distended the stomach with up to 2,000 c.c. of air. Patients were asked what symptoms they felt when the stomach was distended with air. All complained of a feeling of distension in the abdomen and some remarked that they felt as if their abdomen would burst. This symptom usually appeared after introduction of 800 c.c. of air. Nausea was an early symptom and eructation of gas and passage of flatus also occurred. Cases were divided into two groups, one suffering from liver cirrhosis, emphysema, heart disease, anæmia and hepatosplenomegaly, while the other group consisted of controls without these diseases. In general, the patients suffering from emphysema of the lungs, compensated heart disease and liver cirrhosis felt the above symptoms more readily than did the controls. Some of the first group also complained of palpitation, dyspnœa and precordial distress. The authors mention as a side-effect the facility with which the liver was visualized in straight radiographs of the abdomen after the stomach had been distended with 1,500-2,000 c.c. of air.

PRIMARY CARCINOMA OF THE OVARY

From Montreal, Davis and his colleagues present a study of a series of 270 cases of primary ovarian carcinoma treated in the period between 1930 and 1954 (*Surg., Gynec. & Obst.,* 102: 565, 1956). They present a new method of staging cases clinically into seven groups according to the progress of the disease. In stage O there was carcinoma *in situ* with no invasion of the stroma; in stage I there was gross malignancy confined to the ovary; in stage II the ovarian capsule had been broken through, but there was no manifest spread beyond the gland; in stage IIA both ovaries were affected, but there were no metastases; in stage III metastases throughout the pelvis were present; in stage IV metastases had gone beyond the pelvis and in stage IVL the liver was involved. In assessing results of treatment, the authors believe that some internationally agreed form of staging is essential, and they advance the view that theirs is a useful and logical classification. Their results indicate that the best therapy for these cases, which have a bad prognosis in general, is hysterectomy combined with bilateral adnexal removal. They differ from most authors in believing that x-ray therapy is not at all useful, either for palliation or for increasing the salvage rate. In their series, hysterectomy alone was at least the equal of operation plus x-ray. The over-all uncorrected five-year survival rate was 37.6%.

(Continued on advertising page 40)

89th ANNUAL MEETING—SCIENTIFIC PROGRAM

ANTICOAGULANT THERAPY (June 13)

The panel first discussed the mechanism of blood coagulation. The first phase deals with the conversion of prothrombin to thrombin; factors involved include thromboplastin and other plasma-thromboplastic factors, the most recent one being known as Factor E or the Hageman factor; two other plasma factors (Factor V or proaccelerin and Factor VII or proconvertin) come into play at one time or another.

The mechanisms by which anticoagulants interfere with blood coagulation may be summarized as follows: (a) heparin acts as an antithrombin, as an anti-enzyme and as an anticellular mitotic factor, and moreover seems to act on the lipid fraction of the blood (clearing factor); (b) the coumarin derivatives act as an anti-prothrombin and as an anti-vitamin K. In fact, it seems that coumarin derivatives lower proconvertin level more than the prothrombin level, and the Quick prothrombin time represents the proconvertin level more than the prothrombin level in the blood.

If heparin is used, the therapy must be checked by the conventional Lee-White coagulation time; and if the coumarin derivatives are used, prothrombin time must be determined at regular intervals.

Dr. Long reported his successful experience in avoiding venipuncture by using Jacques's technique, in which a small puncture at the tip of the finger is made. This technique has been well described elsewhere but the reporter stressed that: (a) the thromboplastin clotting time must be between 11 and 13 seconds; (b) the batch of thromboplastin must be prepared with great care; (c) it must be kept in a deep freezer—activity is retained for a period of about one year; (d) as far as possible, the blood must not be contaminated by tissue juice.

Cardiovascular indications for anticoagulants

This is a very controversial subject. One can play with figures and make them show whatever one wants to prove. One aspect of the problem which has been emphasized too much in the past is the frequency of thrombo-embolic complications after myocardial infarction—they exist, but do not seem to be as frequent as used to be claimed. The good- and bad-risk classifications proposed by many authors is good on theoretical grounds, but from a practical point of view on many occasions, it is almost impossible to tell from the beginning who belongs to the good-risk and who belongs to the bad-risk category. In conclusion the panel seemed to be of the opinion that anticoagulants should be used where there is no contraindication. The conversion of auricular fibrillation to sinus rhythm need not be attempted under anticoagulant therapy unless a history of previous embolism has been elicited.

Neurological indications for anticoagulants

The problem is even more complex when the therapeutic approach to cerebrovascular accidents is considered. Carefully selected cases of cerebral thrombosis seem to improve on an anticoagulant regimen. The differential diagnosis between causes of cerebrovascular accidents remains a big problem; often all the various methods of neurological examination have to be used. A report from the Mayo Clinic, where patients with the syndrome of intermittent insufficiency of the basilar artery were studied, was favourable to the use of anticoagulants.

Advanced cases must be excluded, and hypertensive encephalopathy is a definite contraindication.

After vascular surgery (according to the surgeon on the panel), if technique is good, the anticoagulants are not needed. The same is true if an embolus is located at the aortic bifurcation and surgery is clearly indicated. On the other hand, in the case of a femoral embolus, anticoagulant therapy must be applied while a chance is being given to the collateral circulation to take over; finally, if surgery is decided upon, protamine is used just before operation.

One of the best indications for anticoagulant therapy remains phlebitis.

PROBLEMS OF TONSILLECTOMY (June 15)

The panel chairman was Dr. J. C. Rathbun, and the other participants were Dr. A. W. Bagnall, Dr. H. L. Bacal, Dr. R. Lavoie and Dr. C. C. Stoddard.

Tonsillectomy is the most commonly performed operation. It is a very important medical problem for many reasons, such as the number of postoperative and operative deaths. As an internist, Dr. Bagnall first pointed out that the contraindications to this procedure include bleeding tendencies and rheumatic diseases. Too many tonsillectomies are performed, especially on adults. The only preoperative routine is a complete physical examination without special tests such as estimation of coagulation and prothrombin times, except if the history of the patient is contributory. However, there was disagreement on the panel on that point, and many surgeons use these blood tests as a routine.

For patients suffering from allergic conditions, according to Dr. Bacal, tonsillectomy is not more dangerous than for others. Contact with allergens should be minimized before operation in these cases. Antihistamines and psychotherapy are also recommended. For these patients, gas anæsthetics are indicated, but Pentothal and ethyl chloride are to be avoided.

Dr. Stoddard stressed the importance of a visit by the anæsthetist to the children preoperatively, with special attention to the urinalysis and the temperature. Adults, however, are different types of patients to handle, and require individual preoperative preparation. Dr. Lavoie stressed the importance of giving vitamin C preoperatively in order to overcome more easily physiological stress. He insisted on the utmost importance of gaining the child's full confidence.

Dr. Stoddard stated that the general principles in administering anæsthetics are safety and comfort for the patient and convenience for the surgeon. He told general practitioners doing anæsthetics part-time to use the anæsthetic they knew best. Avoidance of anoxia is the major problem. This is best done by using Vinethene and a tracheal tube and maintaining a clear airway. In endotracheal anæsthesia the patient should be relaxed. If a child has not received preoperative drugs, the mask is not to be clamped on his face.

Dr. Lavoie noted that the technique may vary a great deal from one operation to another and emphasized the point that adenotonsillectomy is by no means minor surgery. Consequently he detailed fully his technique, summarized as follows: (1) Rose or Trendelenburg position;. (2) insertion of the very useful Brown-Davis mouth gag; (3) removal of the adenoids first. This first step must not be roughly done because of danger of injuring the muscles round the uvula and causing stricture of the Eustachian tubes; (4) performance of tonsillectomy by blunt dissections and snare.

The main precautions during operation are (1) intubate; (2) proceed only when proper anæsthesia is obtained because relaxation of muscles is needed to avoid trauma; (3) keep the patient in the operating room until the wounds are perfectly dry.

The postoperative care Dr. Lavoie recommends is: (1) bed rest in hospital for 24 hours; (2) only light sedation; (3) antibiotics only to prevent flare-ups of infection in special cases and not routinely because of possible allergic reactions; (4) hydration five or six hours after

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operation. He also insisted that there is absolutely no need to starve a patient after an adenotonsillectomy.

Nowadays severe complications are rare, except for primary or secondary hæmorrhage, also decreasing. Except for blood disorders, these hæmorrhages are related to inadequate hæmostasis. The most effective method of controlling tonsil bleeding is ligation and suture of bleeding points, with great attention to the second anæsthesia. Adenoid bleedings may be due to lymphoid tissue left behind, and sponge pressure and a proper-sized pack are usually effective in other cases. Secondary hæmorrhages are less profuse generally and may be handled by the same methods, but under local or topical anæsthesia. Dr. Lavoie stated that obviously the most important point in treating hæmorrhages is to act quickly.

As to the results of tonsillectomy, Dr. Bacal pointed out that it is untrue to believe that the operation will cure allergic diseases *per se*. It is interesting to note however that reaccumulation of lymphoid tissue is encountered in 27% of allergic children compared with 3% of non-allergic ones.

To close the discussion, Dr. Bagnall emphasized the utmost importance of giving penicillin three days before and three days after tonsillectomy to every patient who has suffered from rheumatic fever, to prevent subacute bacterial endocarditis.

RAOUL ROBERGE

SECTION ON MEDICAL CARE (June 14)

Three papers were presented in the meetings on Thursday afternoon of the Section on Medical Care, with Dr. C. A. Gauthier of Quebec in the chair. The first speaker was a guest speaker from Ann Arbor, Michigan, Dr. S. J. Axelrod, who presented a study of medical care under the Windsor Medical Services.

He was followed by Dr. F. B. Roth, who discussed universal hospital care in Saskatchewan. In his discussion, Dr. Roth confined his remarks almost entirely to the field of acute hospital care. He first reviewed the political and geographical factors which had led to the establishment of universal hospital care in Saskatchewan at an earlier date than in the rest of Canada. He then outlined the salient characteristics of the program. After a reference to the study made by Myers in 1952 on hospital utilization, Dr. Roth ended by analyzing some of the criticisms levelled at schemes for providing comprehensive hospital care on an insurance basis. The first criticism was that costs get out of hand, but the Saskatchewan record would seem to indicate otherwise. The second criticism, namely that there would be abuse of service, had proved equally unimportant. The criticism that administration costs might be excessive could be met by showing that such costs had decreased from 7.9% in 1947 to 3.7% in 1955, while the cost of administration per case has also decreased. There had been no loss of interest by the hospitals in the administration of their own affairs and there had been no interference in the doctor-patient relationship. Finally, the criticism that such a scheme would not work had been refuted by Saskatchewan experience.

The final paper in the session was given by Dr. F. W. Jackson of Ottawa who discussed the provision of hospital and ambulatory services in radiology and laboratory medicine. He began by giving a historical sketch of the factors which had led to the establishment of public health services in Canada and to variations in these services. Dr. Jackson emphasized particularly that in every country which he had visited a most undesirable feature in medical care was the lack of properly organized ambulatory pathological and radiological services for general practitioners. It was important, in providing these services, to think of them as a complete service applying to the patient both in and out of hospital. If they were not provided on an ambulatory basis, every patient would try to get admitted to hospital to save himself money.

A small amount of money was made available in 1953 under the Health Grants Program for ambulatory services in radiological and laboratory medicine, and up to now this grant has allowed nearly all the provinces to get most of their hospitals, especially the rural ones, reasonably well equipped with x-ray and laboratory facilities. It has also made possible the establishment of training courses for technicians, of whom approximately 800 have already been trained. Moreover, some 49 physicians have been given bursaries for special training in pathology and 47 for special training in radiology.

SOFT TISSUE INJURIES (June 15)

The panel consisted of Drs. Georges Cloutier, Eucharistе Samson, Edouard Beaudry and Louis Dionne. Discussion first centred on the general principles which should rule the repair of soft tissue injuries. The necessity for careful examination of the patient was again stressed. Success of treatment depends on two principal factors: (a) good cleaning-up; (b) excellent débridement. The panel advised making the lips of the wound regular, without however sacrificing too great a quantity of skin. It should be considered that after the 12th hour the wound is contaminated, although up to the 18th hour under an antibiotic umbrella it may be treated by primary closure. In wounds two or three days old, it is necessary to use the open method and let the wound granulate from the bottom, unless it is possible to excise contaminated tissue. Panel members were definitely hostile to the use of local antibiotics; these substances play the part of a foreign body and the organism is built for dealing with injuries.

The second point of interest was discussion of wounds of the hands. General principles apply here as elsewhere, with the difference that great economy must be exercised in excising tissue, particularly the skin. Recommended technical procedures included: (a) the use of a tourniquet; this can be kept at 20-30 mm. above systolic pressure for one hour without danger; (b) closure as far as possible without drainage by the use of large sutures; (c) elevation of the limb during the period of convalescence, and (d) immobilization by apparatus if necessary. For the fingertips, dermo-epidermal grafts were recommended for superficial lesions; for deep lesions, a pedicle graft was recommended. Large extended wounds of the hand and a dermo-epidermal graft, even temporarily, was advised with a possibility of later employing pedicle grafts. Fragments of skin which had been torn off might be used for grafting, provided that the subcutaneous tissue was eliminated.

The problem of section of tendons was then dealt with. Two different opinions were stated as regards injuries to flexor tendons; one view was that where a clean section had occurred within an hour or less immediate suture was possible. The other view was that if the injury was at the level of the lower half of the palm or in the fingers, it should never be repaired immediately because sliding of the tendon was then very much impaired. If infection was present, an interval of three to four months should elapse before repair, and if osteitis was present this interval should be prolonged to six months. Extensor tendons required repair within eight to ten hours after the accident. Particularly favourable sources of grafting were the palmaris brevis or the extensors of the toes. The existence of the palmaris brevis should first be confirmed, and then in order to conserve the areolar tissue of the muscle an incision should be made the whole length of the forearm in order to take the muscle intact. In the case of grafts on the dorsal surface of a finger, it was advised that the graft begin at the third phalanx and continue to the upper half of the palm of the hand, the whole graft being enveloped in the lumbricals.

Finally the treatment of facial wounds was discussed. Even very small foreign bodies should be removed when they infiltrated the wounds. For their removal, a good

brushing or even removal on the point of the scalpel could be used. Very fine silk sutures should be used and removed after two or three days. A good compression dressing was essential, and arrangements should be made to fasten it firmly in place.

Eyebrows should never be shaved. Examination should be made to ensure that the facial nerve was functioning correctly and that Stensen's duct was intact. If there were lesions of either of these structures, the attention of the onlooker should be drawn to the existence of lesions of either one or the other and these should be entered on the case notes. Skin fragments, even if only held in place by very small pedicles, should be restored to their place. Injuries to the ear should be treated with great conservatism and great optimism; injured parts should be replaced very gently and the results obtained would often be very good. In general terms, it is always better not to apply grafts to a face, because such grafts produce as a sequel a yellowish plaque not æsthetically pleasing. If it is absolutely necessary to use a graft, the skin situated behind the ear was particularly recommended.

The four following points were considered valuable: (a) be gentle with the tissues; (b) evacuate hæmatomas thoroughly; (c) never leave foreign bodies in the wound and never add them, and (d) never close wounds under tension.

Surgery or repair of true keloids was disappointing, even with the addition of cortisone. No attempt should be made to cure keloids on the shoulders or the sternum.

As a supplement to the different points previously taken, the forum ended with a few notes on the local treatment of burns. Clinically there are two sorts of burns: (a) those where the skin is completely destroyed; (b) those where the skin is not completely destroyed and epithelium will regenerate at the end of 12 to 15 days. After this, delimitation of treatment appears easy; in the first case, any débris must be removed, and in the second case it must be kept in place. Unfortunately it is almost impossible in most cases to assign at the start a case either to one or the other of these two categories. In the closed method of treatment, it is important to exercise a gentle and even pressure. Often a sea sponge gently moistened will play to perfection the role of a compressing agent.

JEAN BEAUDOIN

REACTIONS TO THE ADMINISTRATION OF ANTITETANIC SERUM (June 15)

The chairman of this panel was Dr. Owen V. Gray, Toronto. The other members were Dr. J. D. L. Fitz-Gerald, Toronto, and Dr. R. J. Wilson, Toronto.

Definitions of antitoxin and toxoid were given. The allergic reaction to antitetanic serum may cause permanent cerebral damage and many other classical symptoms; therefore material for skin testing should be chosen carefully. Antitoxin contains principally globulins but the other fractions are present. False or anaphylactic reactions may follow testing with 1/10 c.c. of the 1 in 10 solution. For this reason testing intravenously with 1/50 c.c. of the 1 in 100 solution is advised. Intracutaneous injection gives more accurate information than conjunctival testing. The intracutaneous method would prevent reactions occurring at present in 5-6% of patients.

Nobody knows for certain how long a passive immunization lasts, but we take for granted that 1,500 units of ATS give a maximum peak in 48 hours and protection for 7-10 days.

Better than passive immunization would be previous universal active immunization with tetanus toxoid. The advantages of active immunization are: (a) a circulating antitoxin level at all times which protects against small and neglected wounds; (b) a very rapid response to a booster dose; (c) the avoidance of ATS administration. It was recalled that there is no natural immunization and no immunity following recovery from tetanus.

A booster dose gives a response in 4-5 days and a delayed response of 7-12 days in patients who have not had: (a) the booster dose of primary immunization; (b) a complete primary immunization; (c) any injection for the last 5-10 years. In these cases, ATS may be added to the booster dose.

The results of survey of 100 individuals 8-10 years after TABT in June 1954 showed that 39% had a titre less than 0.1 unit. After one booster dose, all had a titre greater than 0.1 unit, and 97% a titre greater than 1.0 unit. A survey in Massachusetts showed that 80% of adults were not immunized against tetanus, having a titre less than 0.01 unit. The answer to this problem would be toxoid immunization for all adults, but it is very difficult to obtain this.

A physician would not be accused of criminal negligence if a patient died of tetanus without having received ATS, provided he wrote on the chart that he had thought of it and decided for such-and-such reasons not to give ATS.

JACQUES BERGERON

RECOGNITION AND MANAGEMENT OF PSYCHIATRIC EMERGENCIES (June 14)

Panel: Drs. C. A. Martin (Chairman)—Quebec
Robert O. Jones—Halifax
Elliott Emanuel—Montreal
D. G. McKerracher—Saskatoon
Leo Alexander—Boston
R. Holliday—Essondale

Après la présentation des membres du panel et une tentative de classification des urgences en psychiatrie, la discussion s'oriente d'abord vers le diagnostic différentiel à poser entre l'urgence médicale ordinaire et l'urgence proprement psychiatrique. C'est habituellement le médecin practicien qui est appelé à poser ce diagnostic différentiel. Les membres du panel sont d'accord sur l'importance d'un diagnostic précoce et d'une prompte hospitalisation.

Dans tous les cas, mais surtout si le patient doit demeurer quelque temps à la maison, le "traitement" de l'entourage immédiat est d'une importance capitale. Le médecin doit avoir une attitude ferme et décisive, assumer complètement la responsabilité du cas et ne pas hésiter à prendre les mesures qui s'imposent. Quand cela s'avère nécessaire, le médecin doit s'entourer des aides appropriés (infirmiers, force policière); le patient violent cèdera le plus souvent assez volontiers devant des mesures de "force", intelligentes et puissantes.

On insiste ensuite sur le fait que toutes les urgences psychiatriques ne sont pas des cas de violence, et qu'au contraire, les états dépressifs avec danger de suicide sont beaucoup plus fréquents. S'est l'opinion unanime des membres du forum que ces malades doivent être hospitalisés et traités rapidement. L'électroplexie est reconnue pour son action efficace et spécifique, en particulier sur les idées de suicide. Les médications "tranquillisantes" sont inutiles et dangereuses, car elles peuvent aggraver l'état de dépression et précipiter la tentative de suicide. Ici encore, il faut adopter une attitude ferme et demander l'hospitalisation; on ne doit pas attendre le consentement du malade; tout délai peut être fatal. On ne doit pas hésiter quand il y a possibilité de suicide; il n'y a qu'une ligne de conduite: hospitalisation, surveillance étroite et convulsivothérapie. La psychothérapie peut prolonger ou intensifier la situation dangereuse. Le danger de suicide existe autant, sinon plus, chez les gens agées.

* * *

Dans les situations de panique (guerre, etc.), l'hospitalisation est rarement possible immédiatement parce que la situation en question désorganise la communauté et que les victimes sont trop nombreuses. L'appréhension désintègre passagèrement le fonctionnement harmonieux de la personnalité et il semble qu'ici encore le facteur

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principal soit le besoin de direction (leadership). Le traitement d'urgence doit se faire sur place, avec autorité, calme et précision.

* * *

A l'hôpital général, les urgences psychiatriques exigent un diagnostic rapide et précis. Il semble qu'une étude attentive des notes des infirmières et du comportement du patient dans les jours qui précèdent l'état aigu pourrait permettre de prévenir beaucoup de ces cas.

* * *

It est nécessaire que les internes et les médecins praticiens soient entrainés à reconnaître et à maîtriser les cas d'urgence psychiatrique. Le seul entrainement valable, c'est le stage dans un service psychiatrique. Le médecin aura ainsi vu et traité de tels cas et il aura les connaissances et la confiance en soi nécessaires pour les traiter et orienter logiquement.

Après l'etat d'urgence, le médecin traitant doit demeurer en contact avec le psychiatre et être tenu au courant du traitement actif et des suites.

JEAN DELÂGE

GENERAL PRACTICE

COLLEGE OF GENERAL PRACTICE OF CANADA

THE COLLEGE of General Practice of Canada held its second annual meeting in Quebec City in conjunction with the Canadian Medical Association. It heard progress reports in many fields. The College membership has passed the 1,300 mark. A Constitution was approved with added classifications for membership and well-defined regulations of postgraduate study requirements.

Effective next year, the College will inaugurate its own annual business meeting combined with 2½-day scientific sessions specially planned for the general practitioner. These will be held in the Sheraton-Mount Royal Hotel in Montreal March 4-6, 1957. Preliminary plans have advanced so far that three luncheon speakers have already been announced. These will be the Hon. Paul Martin, Minister of Health and Welfare, Dr. Wilder Penfield, Montreal, and Dr. Jack Detar, President of the American Academy of General Practice.

The Committee on Hospitals of the College recommended that departments of general practice be established in all general hospitals, including university affiliated hospitals whether privately or publicly owned. More than 40 large Canadian hospitals have established these departments. The report of this committee stated that "the establishment and proper operation of a Department of General Practice can assure the family doctor of a proper place in the hospital by providing him with fair and equitable representation on all its staff activities; staff privileges to treat his patients within his competence and opportunity to participate in a continuous educational program. The Department should also assume responsibility for organizing, staffing and operating the Outpatient Department." It is recommended that privileges be extended to all doctors engaged in the hospital in the practice of general medicine, pædiatrics, obstetrics and surgery, according to their experience, judgment and ability.

A second year of internship training for family doctors was recommended by a special committee of the College which has studied internships for the past year. "The usual junior rotating internship should be followed by a second year's internship which we shall call a Residency in General Practice," said the special committee. "It is becoming increasingly apparent that one year's rotating internship alone does not give enough foundation for easy, rapid, future growth of the doctor." "The College believes this second year must be different from that leading to a specialist field. It should be specifically designed to meet the needs of graduates intending to enter general practice and should provide additional experience and responsibility in those branches of medicine which are of primary importance to the general physician." "The second year internship program should include: 3 months of general medicine including treatment of skin ailments; 3 months of obstetrics and gynæcology; 3 months of general emergency surgery; 1 month of experience in administering anæsthetics; 2 months of work in pædiatrics."

Following completion of a second-year internship, the College Committee recommended a preceptorship program of from two to four weeks with a senior practising physician. "This program will take the resident into the atmosphere of an active family doctor, which is somewhat removed from academic hospital work, and insert him into the everyday practice of medicine," said the Committee.

"Continuing education for the practising physician is one of the greatest problems facing us today," Dr. E. C. McCoy of Vancouver, Chairman of the Committee on Education, reported. His report will be given in full in this journal.

The Survey of General Practice in Canada is under way. This is a three-year study of the Canadian family doctor, his training, his work and the facilities available to him. It is a joint undertaking of the College of General Practice and the Department of Hygiene of the University of Toronto. Final plans for this nation-wide survey of family medical practice were reported at this Quebec meeting. Between 250 and 300 doctors and their practices will be studied by the survey teams, who will spend several days with each doctor. Preparatory work for the survey was begun last January with the appointment of Dr. Kenneth F. Clute as Director. Dr. John B. Firstbrook began his duties as Assistant Director on July 1. A pilot study of a small group of family doctors, mainly in the Toronto area, is now under way to test the study methods. This trial study will be completed by September and will not constitute part of the ultimate survey.

It is expected that the study of Ontario general practitioners will be completed by December 1957. Family doctors in the Maritimes and Quebec will be surveyed during the following year; western family physicians will be studied in 1958-59. A report of the findings will be forthcoming early in 1960. The general practitioners studied will be questioned on their training, the facts which influenced their choice of profession, how well their medical education prepared them for modern medical practice, the conditions under which the family doctor works, the effects of voluntary and government medical and hospital care plans on his practice, the availability of hospital and consultant facilities, and even the effect of climate and geography on their practices.

The Committee planning the survey includes: Dr. W. V. Johnston, Executive Director, College of General Practice (Chairman); Dr. C. Rose, Aurora, General Practitioner; Dr. P. A. Kinsey, Toronto, General Practitioner; Dr. T. Tweedie, Hamilton, General Practitioner; Dr. W. C. Cowan, Richmond Hill, General Practitioner; Dr. A. F. W. Peart, Assistant Secretary, Canadian Medical Association; Dr. C. W. Farquharson, Toronto; Dr. Milton Brown, Professor of Hygiene and Preventive Medicine, University of Toronto; Dr. J. A. MacFarlane, Dean of the Faculty of Medicine, University of Toronto; Dr. Wendell Macleod, Dean of the College of Medicine, University of Saskatchewan; Dr. Chester Stewart, Dean of the Faculty of Medicine, Dalhousie University; Dr. Jean-Baptiste Jobin, Dean of the Faculty of Medicine, Laval University.

Consultants: Dr. F. W. Jackson, Department of National Health and Welfare, Ottawa; Dr. C. D. Gossage, Confederation Life Association; Dr. Harding le Riche, Physicians' Services Inc., Toronto.

COLLEGE OF GENERAL PRACTICE

REPORT OF PRESIDENT TO BOARD OF REPRESENTATIVES

A YEAR AGO I accepted this honourable position on the basis of my confidence in the faithful assistance of elected representatives and the membership at large. I stressed at that time that the College was now well established and that I hoped it would be an inspiration to all to keep it progressive, helpful and strong. I can now report to you that my confidence has been well sustained and that it has been a good year for the College of General Practice of Canada.

Last October, by invitation I attended the Alberta and Saskatchewan Chapter Meetings during their Provincial Conventions. On both occasions I spoke on changing trends in medical education and stressed the importance of the functions of the individual provincial chapter. These meetings were well attended and in my opinion showed encouraging enthusiasm at this stage of our development.

In March of this year I had the opportunity of again speaking to the Alberta Chapter at their refresher course in Red Deer. On this occasion I dealt with the subject "Some Thoughts on the Future of General Practice", pointing out the effect which general practitioner educational organizations in this and other countries are already having on our own particular branch of medicine. It is becoming increasingly clear that annual refresher courses sponsored by provincial chapters are promoting a very valuable effect on the education interest of the men concerned, as well as being a potent factor in the development of the chapter itself.

I am proud to report that on your behalf Dr. Pat Rose and I were invited by the Dean of the Faculty of Medicine, University of Alberta, to attend their annual Faculty meeting and to discuss with them our College views on medical education as related to the man in general practice, dealing with the undergraduate, the internship and the postgraduate periods. This proved to be a most interesting evening with exchange of mutual problems.

Last March your Executive Director and I attended, by invitation, the meetings of the Congress of Delegates at the American Academy of General Practice convention in Washington, D.C. During this three-day session we gathered valuable information in relation to the policy and business management of that organization. We were impressed with the tremendous amount of business transacted in a short space of time. I am sure some of this information will be brought forward by our Executive Director in an attempt to facilitate some of the functions of our own meetings.

My limited experience this past year has impressed me with the fact that, in future, every effort should be made to have national executive representatives meet with provincial chapters as frequently as possible. It not only acts as a stimulus to the local chapter but it facilitates national policy with the membership at large. I would also recommend that it be policy in future that the President, or his alternate, with the Executive Director attend annually the Convention of the American Academy of General Practice at the expense of this College. This yearly liaison at a national level is most valuable and essential.

Since the Annual Meeting of the Board of Representatives a year ago our College has made some very definite accomplishments.

The Survey of General Practice is now a reality in that a director and staff have been appointed and the study is under way.

After considerable and careful thought we have embarked on a public relations program. Just what future this field of endeavour will have for us remains to be seen. To date we are convinced that our commitment has been well justified and we look forward to greater development in this field, constantly being aware that effective public relations begins with ourselves and our patients in our own offices and communities.

We are proud to present this year in booklet form our Annual Report. It has not been easy to have this booklet prepared for this meeting. We hope you will approve of it as a precedent for future years.

This year has seen specific action taken on the establishing of a Scientific Assembly. Provisional plans are now completed for this meeting in Montreal next March. We look forward to this first Annual Scientific Meeting as an outstanding event which will set a high standard for future Annual Scientific Meetings.

During the past year a Research Committee at McGill University, sponsored by the Rockefeller Foundation, began a two-year study in relation to possible changes in the present-day medical curriculum. Your College, again by invitation, presented a brief on this subject as it affected the field of general practice. We were fortunate in having Dr. Murray Stalker present this brief in person on behalf of the College.

It would appear to me that our increase in membership this year has been encouraging and satisfactory. Again I would like to point out that although we require reasonable membership for proper function, we must never sacrifice quality for quantity, and I would hope that we may find it possible as we grow to continue to improve quality regardless of our quantity of membership. Our treasurer's report may indicate to you that we are not as yet financially sound on our present basis of membership and yearly dues. If necessary, let us favour an increase in yearly dues rather than extend our membership unduly.

I must report to you that we have failed in some of our projects for this year. We had hoped to be an incorporated body by the time of this meeting. You will find that this has not been possible. A report to you later in this meeting will, I believe, indicate to you that the delaying action we have accepted on this problem will at the moment not deter our functioning.

A year ago it seemed imperative that we employ at least a part-time education director. Although your executive have done their utmost to bring this about, to date we have not encountered a suitable candidate. If this matter was important a year ago, it is doubly so now. It has always been amazing to me how our present executive director has been able to fulfil so adequately the multiple functions of the head office of this group to date. We are constantly and increasingly becoming involved in so many major projects now in our development that I would emphasize again that it is most vital that we immediately take steps to have additional executive staff.

In conclusion, I would like to thank the members of this Board and the executive staff for helping to make the duties of my office most pleasant during the past year. I am certain my successor can be assured of the same happy co-operation and support. May our tasks continue to be not only the accomplishing of objectives but the pursuit of ideals.

J. H. BLACK

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COLLEGE OF GENERAL PRACTICE OF CANADA OFFICERS, 1956-57

Past President.—Dr. J. H. Black, 925 W. Georgia St., Vancouver, B.C.

President.—Dr. C. L. Gass, Tatamagouche, N.S.

President-Elect.—Dr. Jack McKenty, 513 Boyd Building, Winnipeg, Man.

Honorary Treasurer.—Dr. W. A. Wilford, Berford Street, Wiarton, Ont.

Chairman of the Board of Representatives.—Dr. P. B. Rose, 8211-107 Street, Edmonton, Alta.

Executive Director.—Dr. W. V. Johnston, 176 St. George Street, Toronto, Ont.

Dr. Gass, the new president, is a native of Nova Scotia, and was educated at Dalhousie and Mount Allison Universities. He graduated in medicine in 1914, served in the British Army in World War I, and then settled in Sackville, N.B., where he began his practice. For several years he was senior physician at Sackville Medical Centre. For 25 years he served as campus physician and lecturer in physiology at Mount Allison University. The university awarded him an honorary doctor of laws degree in 1955 for his long public service. Dr. Gass is past president of the New Brunswick Mental Hygiene Council. Both of Dr. Gass's sons are doctors and his daughter is a nurse.

PRINCE EDWARD ISLAND CHAPTER

The Prince Edward Island Chapter held its annual meeting on May 30 in Charlottetown. With a good attendance at its three sessions, it was considered a very successful day.

The morning meeting was held in the solarium of the Charlottetown Hospital and was chaired by Dr. J. A. McMillan. A number of patients were presented by members of the hospital staff, followed by a general discussion of their problems.

The afternoon meeting was in the Charlottetown Hotel with Dr. T. L. Farmer as Chairman. This was the annual business meeting of the Chapter. Dr. H. Moyse discussed the educational program of the College. Its public relations program was considered and a decision reached to begin to implement its recommendations. The meeting agreed to ask the Prince Edward Island Medical Association to set up a Section of General Practice as recommended by the C.M.A. Section of General Practice. The following slate of officers was elected for 1956-57: President, Dr. Raymond Reid, Wellington; President-Elect, Dr. Henry Moyse, Summerside; Secretary, Dr. W. E. Callaghan, Summerside; Treasurer, Dr. Harold P. Stewart, Charlottetown; Board of Representatives, Dr. George Dewar, O'Leary; Alternate, Dr. J. A. McMillan, Charlottetown; Education Committee, Dr. J. A. McMillan, Charlottetown.

At the evening session, chaired by Dr. Farmer, four instructive talks were given. Dr. Eric Found discussed streptococcal pneumonia; Dr. John Theriault dealt with the tranquillizing drugs; Dr. William Moreside spoke of the use and value of the ophthalmoscope to the general practitioner, and Dr. George Dewar discussed the training of the general practitioner and his place in the community not only medically but socially and economically. Dr. Peter MacDonald and Dr. Margaret MacMurdo provided entertainment.

MEDICAL MEETINGS

ANNUAL MEETING, CANADIAN MEDICAL PROTECTIVE ASSOCIATION

The Association's annual meeting this year marked a new epoch. For the first time since the Association's founding it is without the guidance of either the late Doctor R. W. Powell, who conceived and established it, or Dr. J. Fenton Argue who, after working 30 years with Dr. Powell, guided the Association until illness forced him to relinquish the presidency which he had held since 1935.

The Association's First Vice-President, Dr. A. T. Bazin of Montreal, occupied the Chair and his first act after calling the meeting to order was to explain Dr. Argue's absence; he paid tribute to Dr. Argue's service to the Association and to the profession over the years and expressed his willingness to receive a motion embodying the Association's feelings.

Dr. Ross B. Mitchell of Winnipeg said that Dr. Argue, in his 50 years' service to the C.M.P.A., had so left his impress on it "that when the Association's name is mentioned, the image of his towering frame arises in the mind's eye." He moved that "because of his unequalled contributions to the success of this Association . . . the position of Honorary President be created, and that Dr. Argue be elected to this position." In seconding the motion Dr. W. J. P. MacMillan of Charlottetown, P.E.I., said that he did so to express "the admiration and respect for this great leader in his works in this Association which has been so important to the physicians and surgeons of this country." The motion was carried unanimously.

The annual reports of Council and of the General Counsel were presented, together with the auditor's report.

Dr. George W. Armstrong of Ottawa was elected President to succeed Dr. Argue. Dr. Armstrong, in addition to his scientific knowledge and attainment which qualify him exceptionally well for the position, has a record of 20 years' service on the Council of the Association. In accepting the presidency, Dr. Armstrong said that he was fully aware of the responsibility that would be his, and of the difficulty of following a President like Dr. Argue, but he hoped that, keeping the mutual, professional character of the Association in mind, he would be able to guide the Association so that it would continue to provide the profession with guidance and help.

The auditor's report and financial statement showed a satisfactory financial position, although it made clear the increased cost of judgments and settlements.

WORLD MEDICAL ASSOCIATION

At the 26th Council Session of the World Medical Association in Cologne, Germany, April 29 to May 5, 1956, Dr. José A. Bustamente of Cuba was named as President-elect, and Dr. Hector Rodriguez of Chile was elected to Council.

It was agreed that the Second World Conference on Medical Education should be held in Chicago, Ill., August 30 to September 4, 1959. The President of the Conference will be Dr. Raymond B. Allen, Chancellor of the University of California, and the Deputy-President will be Dr. Victor Johnson, of the Mayo Clinic.

Dr. J. A. L. Vaughan-Jones of the United Kingdom has been named chairman of the W.M.A. Committee on International Occupational Health Services, to succeed the late Dr. Carl Peterson, who died while in office.

Council adopted two principles relating to medical ethics and medical law. These principles are: (1) that the same ethical code must govern the doctor in both peace and war; (2) that it is the function of the World Medical Association to formulate any code of international medical law. The Council was firmly of the opinion that the formulation of such a code of law was not the function of laymen, even though they might be lawyers, and that the W.M.A. should rigidly oppose any attempts of outside groups to enter a field in which they are not competent.

It was decided to invite secretaries and officials of national member medical associations and editors of their journals to a meeting at the W.M.A. Secretariat, New York City, October 19 and 20, 1956, to facilitate mutual assistance between the national secretariats and the secretariat of the W.M.A. This meeting will follow immediately the adjourning of the Tenth General Assembly and 28th Council Session of the W.M.A. in Havana, Cuba. The Assembly is scheduled for October 9-15 and the Council Session for October 16 and 17 respectively.

CANADIAN PÆDIATRIC SOCIETY

The 35th Annual Meeting of the Canadian Pædiatric Society was held at Honey Harbour, Ont., June 4-6, 1956. The meeting was well attended by pædiatricians from the whole of Canada and was highlighted by an excellent scientific program. Among the papers of interest in the program were reports of studies in the neonatal period presented by Dr. Philip Banister of Montreal, who reported on controlled oxygen administration in the prevention of retrolental fibroplasia; Dr. Harold Gunson presented a case of anæmia in the newborn due to placental hæmorrhage; Dr. Vera Rose of Toronto made observations on a series of infants of diabetic mothers. Of particular interest and significance was a paper by Dr. W. G. Bowman of Winnipeg who reported a successful series of deliveries of nine infants of Rh-sensitized mothers, by premature induction and multiple replacement transfusions. Each of the mothers in this particular series had had previous stillbirths as a result of Rh isoimmunization. Dr. Bowman's work would indicate that the previous contraindications for premature induction of labour are not valid in this condition.

The handicapped child was discussed in two papers, the first by Dr. J. K. Martin of Winnipeg, who enlarged on the various types of cerebral palsy. Dr. Ruth McDougall of Montreal presented an assessment of hemiplegia in childhood. The discussion following these papers indicated that further investigation into the prevention of such handicaps was of primary importance.

Of particular interest to physicians generally was a round table discussion on accidental poisoning in childhood. From this report of activities in Vancouver, Winnipeg and London, arose a decision by the membership of the Society to increase the facilities for the investigation of such accidents throughout the Dominion and to make more apparent the dangers of household chemicals.

The President-Elect for the year 1956-57 is Dr. Harry Medovy of Winnipeg. Because of increased responsibilities as Professor of Pædiatrics at the University of Western Ontario, Dr. John C. Rathbun was forced to resign as Secretary-Treasurer of the Society. His duties in this post are assumed by Dr. J. A. Peter Turner of Toronto. Councillors for the ensuing year are: Dr. A. F. Hardyment, Vancouver; Dr. H. Brock Armstrong, Edmonton; Dr. U. J. Gareau, Regina; Dr. H. Medovy, Winnipeg; Dr. G. P. Hamblin, Toronto; Dr. E. M. Worden, Montreal; Dr. J. H. Charbonneau, Montreal; Dr. Stephen H. Weyman, Saint John; Dr. Henry B. Ross, Halifax; and Dr. T. G. Anderson, St. John's.

INTERNATIONAL SYMPOSIUM ON VENEREAL DISEASES

The First International Symposium on Venereal Diseases and the Treponematoses was sponsored by the World Health Organization and the U.S. Department of Health, Education and Welfare in Washington May 28-June 1, 1956. In attendance were medical men from 59 different countries; 159 papers were presented in French, Spanish and Russian and this represented the results of a tremendous amount of research into diagnosis, therapy and public health aspects of the above diseases.

In many parts of the world gonorrhœa is endemic. In some western countries the incidence of gonorrhœa and syphilis in the last two years has been on the increase.

The Russian delegation reported on its reluctance to abandon completely the use of heavy metals in syphilis. These are combined with penicillin and vitamins in a manner similar to that used before the penicillin era.

There were several reports on research into non-gonococcal urethritis. Inclusion bodies were reported as present in many cases, and this was taken as one piece of evidence of its possible viral cause. The U. S. Navy reported some cases as possibly psychogenic in origin; they also reported the first four cases of penicillin-resistant gonococci.

The perpetual reservoir of these diseases in uneducated, or floating, or psychopathic or poor-living-standard populations was discussed at great length, as well as problems of education. It was the general opinion that field teams of local trained personnel were much more effective than foreigners.

Newer methods of treatment discussed included Speramycin, combined adrenal steroids and antibiotics, and different new types of penicillin. New methods of serology include T.P.I.A., T.P.I., T.P.C.F., S.T.S., and cardiolipin antigens.

Educational films and scientific exhibits were shown. The free exchange of ideas and appreciation of the fantastic problems existing elsewhere, as discussed in such an international group, made for an exhilarating and stimulating experience. A.H.

CANADIAN TUBERCULOSIS ASSOCIATION

The 56th Annual Meeting of the Canadian Tuberculosis Association was held at Niagara Falls, Ont., from May 15 to 19 inclusive. The theme of the meeting was "The Incomplete Victory". Total registration was 310, including physicians, nurses and lay workers. After two days of general sessions, the various sections (nursing, medical, rehabilitation and secretaries of Provincial Associations) conducted separate sessions, combining again for the annual dinner, special luncheons and other events. Dr. C. G. Shaver, Superintendent of the Niagara Peninsula Sanatorium, was elected President of the Canadian Tuberculosis Association for the coming year. Dr. E. L. Ross, Medical Director of the Sanatorium Board of Manitoba, is the immediate Past President. Dr. Gordon Kincade, Director of Tuberculosis Control for the Province of British Columbia, was chosen as President-elect. The 1957 Annual Meeting of the Canadian Tuberculosis Association will be held in Vancouver.

Resolutions approved by the Canadian Tuberculosis Association at its recent meeting included:

(a) Emphasis upon the incomplete victory against tuberculosis with a strong recommendation for the continuation and extension of case-finding programs along established epidemiological lines. Already established chest clinics and dispensaries should continue to operate

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as active and efficient units at full capacity in their communities.

(b) Re-emphasis of the importance of a period of investigation, treatment, education, and rehabilitation in sanatoria as essential in the management of patients with active tuberculosis.

(c) Emphasis upon education of the public as the next important step in the eradication of tuberculosis. Provincial and local tuberculosis associations were urged to consider ways and means of expanding their program of health education in tuberculosis among the public and among responsible professional groups. It was suggested that representation be made to the proper authorities to obtain increased facilities for the training of personnel in the field of health education.

(d) The importance of providing adequate ancillary facilities and services including a medical social service in sanatoria was stressed, so that the patient may be treated as a person with possible social, psychological and economic problems.

(e) A previous statement approving the development and extension of affiliate courses in tuberculosis for student nurses was supported.

(f) The Department of National Health and Welfare was commended for the advances made in the control of tuberculosis among the Indian and Eskimo populations.

(g) The appreciation of the C.T.A. to the Federal and Provincial Departments of Health was recorded for their continued support of the anti-tuberculosis program throughout Canada and for the continued assistance provided by Federal Health Grants which have stimulated and permitted expansion of tuberculosis control programs throughout Canada.

The Medical Section of the C.T.A. held five half-day sessions from Thursday morning to Saturday noon. Medical papers covering all aspects of tuberculosis as well as certain non-tuberculous chest diseases were presented. A number of prominent physicians from the United States participated in the medical program. These were Dr. E. M. Medlar of New York State, Dr. H. S. Van Ordstrand of Cleveland and Dr. L. A. Pratt of Detroit. Commercial and scientific exhibits were of a high standard. Chairmen for the medical sessions were Dr. C. A. Wicks of Weston, Dr. H. E. Peart of Hamilton, Dr. G. F. Kincade of Vancouver, Dr. H. E. Burke of Montreal and Dr. G. E. Maddison of Saint John, New Brunswick.

In the medical sessions it was noted that across Canada there is now general acceptance of long-term combined chemotherapy for patients with active tuberculosis. There was also evidence of more uniformity of opinion upon the indications for pulmonary resection. Experience during the past few years has brought about general acceptance of the view that at least two of the anti-tuberculosis drugs should be used in combination for a period of at least one year and in many cases for 15 months to 2 years. Pulmonary resection is now generally considered if, after 6 to 9 months of chemotherapy, residual cavities remain with or without sputum containing tubercle bacilli, or if residual solid caseous tuberculous lesions remain, measuring 2 or more cm. in diameter as seen in serial chest x-ray films. It was recognized, however, that smaller residual caseous foci might from time to time discharge tubercle bacilli and give rise to bronchogenic spread of tuberculosis. The importance of continuing chemotherapy for an adequate period without interruption as well as the importance of careful and periodic re-examination of ex-sanatorium patients was recognized.

Several papers dealt with recent trends and results in the treatment of non-pulmonary tuberculosis such as tuberculosis of the bones and joints and the genito-urinary system. In these types of tuberculosis also, the use of long-term combined chemotherapy in conjunction with rest and surgical measures when necessary, has resulted in better residual function and fewer relapses.

Several papers upon the technique and significance of tuberculin testing indicated the increasing interest in the tuberculin test as a screening agent. As the percentage of the population reacting to tuberculin continues to decrease, the diagnostic value of the tuberculin test becomes more evident.

The importance of the various fields of diagnosis and case-finding was emphasized. The greater proportion of new cases discovered come through the general practitioners or the routine hospital admission x-ray program. Considerable interest was evoked by reports on case-finding in certain groups of the general population, notably in the x-ray surveys of the Indian and Eskimo population.

A report upon the results of a tuberculosis case-finding program among those committed to jails evoked considerable interest. It would appear that the incidence of active pulmonary tuberculosis among such persons is considerably higher than among the general population. In a number of provinces, steps are already under way to develop such programs in the realization that among those committed to prison there is a considerable reservoir of tuberculous infection which presents a hazard.

The increasing interest of the Canadian Tuberculosis Association in non-tuberculous chest disease was evidenced by papers presented upon sarcoidosis, pulmonary emphysema, use of lung biopsies, and lung cancer.

By invitation, Dr. C. W. L. Jeans, physician in charge of the Greenwich Chest Clinic, Southeast London, England, presented a review of present methods of treatment of pulmonary tuberculosis in Great Britain.

Dr. Harry Peart on the staff of the Mountain Sanatorium, Hamilton, and Dr. W. S. Barclay from the Indian Health Services were elected Chairman and Vice-Chairman respectively for the Medical Section of the C.T.A. during the forthcoming year. Dr. C. A. Wicks, Superintendent of the Toronto Hospital for Tuberculosis, Weston, Ont., served during the past year as Chairman of the Medical Section with Dr. Peart as Vice-Chairman.

CANADIAN SOCIETY OF PLASTIC SURGEONS

The Canadian Society of Plastic Surgeons held its annual meeting on Friday, June 1, and Saturday, June 2, 1956, at the Chantecler Hotel, St. Adèle, Quebec. Approximately 40 members listened to the full program of papers which included several on the treatment of cleft palate, a couple on radiation injuries, and a report on European plastic surgery centres. At the annual business meeting which took place on Friday evening, before the annual dinner, the following officers were appointed for the coming year: President: Dr. John A. Drummond, 1414 Drummond Street, Montreal; Vice-President: Dr. Hoyle Campbell, Medical Arts Building, Toronto; Secretary-Treasurer: Dr. Robin H. Dale, 205 Canada Building, Saskatoon. It is planned that the next annual meeting will be held at the Banff Springs Hotel, possibly on June 7 and 8, 1957.

FORTHCOMING C.M.A. MEETINGS

1957 Edmonton, June 17-21
1958 Halifax, June 15-19
1959 Edinburgh, July 16-24
(Conjoint Meeting with B.M.A.)
1960 Banff, June 13-17

ABSTRACTS *from current literature*

MEDICINE

A Note on the Association of Emphysema, Peptic Ulcer and Smoking.

F. C. LOWELL *et al.*: *New England J. Med.*, 254: 123, 1956.

Of a group of 25 consecutive unselected patients with chronic obstructive pulmonary emphysema all were found to have been heavy smokers. Bronchogenic carcinoma was present in three patients and peptic ulcer in six. The authors suggest that smoking is important in the etiology of emphysema and peptic ulcer, as well as of bronchogenic carcinoma. The literature is briefly reviewed to support their findings, which they feel warrant additional intensive investigation. NORMAN S. SKINNER

Incidence of Megaloblastic Anæmia after Total Gastrectomy.

L. D. MACLEAN AND R. D. SUNDBERG: *New England J. Med.*, 254: 885, 1956.

Megaloblastic anæmia identical with pernicious anæmia is inevitable as a sequel of total gastrectomy. It rarely develops within three years of the operation and its response to parenterally administered vitamin B_{12} is the same as that of classical pernicious anæmia, since its cause is the loss of gastric intrinsic factor necessary for the absorption of B_{12}.

Eighteen cases of megaloblastic anæmia after total gastrectomy are presented and the authors point out that all survivors of total gastrectomy should be treated in the same manner as cases of pernicious anæmia. This treatment should be started in the third year after operation and should be carried on for the remainder of the patient's life. NORMAN S. SKINNER

Needle Biopsy of the Thyroid Gland.

E. HAMLIN, JR. AND A. L. VICKERY: *New England J. Med.*, 254: 742, 1956.

Needle biopsy of the thyroid gland has been employed on a total of 175 goitres at the Thyroid Clinic of the Massachusetts General Hospital over the past four years. From 74% of the biopsies, information of diagnostic value has been obtained. The procedure is a safe one and relatively simple. It should be avoided if malignant thyroid disease is suspected. It is of particular value in the diagnosis of thyroiditis. The authors discuss their experience and outline their advised technique.

NORMAN S. SKINNER

The Problem of Subclinical Rheumatic Carditis.

C. G. TEDESCHI AND B. M. WAGNER: *Am. J. M. Sc.*, 231: 382, 1956.

The authors think that the Aschoff body *per se* does not express rheumatic activity. The investigations of other writers indicate that Aschoff bodies are found in the atrial appendages in about 1/3 of cases of clinically quiescent rheumatic disease. In some quarters this has been interpreted as indicating that the rheumatic process can be active in the absence of clinical signs and symptoms. However, the authors stress that the Aschoff body is not a static structure, and that consideration of its life cycle is imperative in any attempt to correlate clinical and pathological manifestations. It is their opinion that in the presence of old or senescent Aschoff bodies the histological criteria of activity should be more dependent on evidence of acute inflammation, such as an exudative inflammatory reaction, fibrinoid alteration of the ground substance, and swelling, fragmentation, etc., of the connective tissue fibres.

Using these criteria, a total of 400 consecutive left atrial appendage biopsies removed during mitral commissurotomy were reviewed. Although Aschoff bodies were present in 75 cases (18.8%), unequivocal histological evidence of active rheumatic carditis was found in only 8 cases (2%).

In even this small number of cases, clinical evidence of tissue activity could not be demonstrated, because of a striking lack of correlation between the tissue changes and blood studies, including serological procedures.

The writers suggest that the discrepancies may have been due to modification of the host response by the use of what they describe as "potent therapeutic agents"—meaning, of course, corticosteroids. S. J. SHANE

A Clinical, Physiologic and Biochemical Study of Patients with Malignant Carcinoid (Argentaffinoma).

A. SJOERDSMA, H. WEISSBACH AND S. UDENFRIEND: *Am. J. Med.*, 20: 520, 1956.

Clinical and laboratory findings in six patients with the "malignant carcinoid syndrome" are presented, and confirm previous descriptions of a syndrome manifested by vasomotor disturbances, chronic diarrhœa, respiratory distress and valvular disease of the right heart. Two other consistent findings were arthritic symptoms and hypotension during flushes.

Using chemical methods, blood serotonin (5-hydroxytryptamine) levels in carcinoid patients were shown to range from 0.5 to 2.7 μg. per ml., compared to normal values of 0.1 to 0.3 μg. per ml. Analysis of a carcinoid tumour showed a serotonin content of 0.8 mg. per g. and the presence of enzymes involved in the formation and destruction of serotonin.

Many of the manifestations of the "carcinoid syndrome" are apparently the result of serotonin excess, as has been suggested previously. However, a marked alteration of trytophan metabolism, resulting in a concomitant disturbance in niacin and protein production, should also be considered a contributing factor in the pathogenesis of this condition. S. J. SHANE

SURGERY

Traumatic Intracerebral Hematoma.

R. L. MCLAURIN AND B. H. MCBRIDE: *Ann. Surg.*, 143: 294, 1956.

Traumatic apoplexy has been known since Bollinger described it in 1891, but the exact mechanism of development is still doubtful. Clinical findings are unconsciousness following the initial injury, then temporary improvement before progressive decrease of consciousness and hemiplegia. The lucid interval may be eliminated, so that failure to improve may be a definite indication for operation. Herniation of brain through exploratory burr-holes, especially if it is more than four days after the injury, leads to suspicion of an intracerebral hæmatoma. The clot should be evacuated under direct vision, for it is unusual for it to be so liquefied that it can be aspirated through a needle.

The 16 cases described show no characteristic syndrome different from any intracranial clot. A plan of procedure is presented for the handling of such patients. The end-results of surgical evacuation justify many negative explorations, for the patients who survive show minimal degrees of neurological deficit.

BURNS PLEWES

Cancer Development in the Gastric Stump after Partial Gastrectomy for Ulcer.

N. HELSINGEN AND L. HILLESTAD: *Ann. Surg.*, 143: 173, 1956.

A number of cases of carcinoma in the gastric stump after an operation for ulcer have been reported. In a group of 303 patients with gastric resection for benign peptic ulcer done between 1919 and 1944 at an Oslo hospital, a follow-up succeeded in tracing 75%. All pa-

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tients dying of gastric cancer or lost to follow-up within five years of operation for gastric ulcer were excluded, since in such cases suspicion was cast on the nature of the ulcer for which the operation was performed. There remained 95 patients with resections for gastric ulcer and 125 patients with resections for duodenal ulcer, and of these 11 developed cancer of the gastric stump. There was an average interval of 20 years after operation to the manifestation of cancer.

Comparison of the death rate from cancer of the stomach in this group with the Norwegian official death rates revealed a marked difference between the duodenal ulcer and gastric ulcer groups. The duodenal ulcer group showed a smaller than expected incidence of gastric cancer, but the gastric ulcer patients showed 10 deaths from cancer compared with 3.38 expected. This is shown to be statistically significant.

Patients with gastric resections for gastric ulcer are exposed to an increased risk of developing gastric cancer.

BURNS PLEWES

Gunshot and Sword Wounds of Thorax and Abdomen.

E. GRATTAN: *Brit. J. Surg.*, 43: 279, 1955.

Contrary to the almost universal practice of exteriorization of large bowel wounds or proximal defunctioning colostomy in World War II and Korea, this Kenya surgeon suggests that these radical measures may not be necessary and refers to eight cases of large-gut injury where the bowel was returned to the abdomen after repair and with colostomy. Exteriorization would still be advocated in the case where there is more extensive bruising or doubt exists as to viability. Also proximal colostomy would be advocated only for extraperitoneal injuries of the rectum, inaccessible to suture.

Chest wounds were handled in conventional manner by repeated aspirations right from the earliest possible time, with every effort made to keep the chest dry. Streptokinase-streptodornase was employed as soon as clotted hæmothorax was diagnosed.

The clinical and radiological features of bruised lung syndrome are reviewed and a plea is made for recognition and conservative therapy, such as keeping a clear airway, by bronchoscopic suction or tracheotomy if necessary, as well as breathing exercises. General anæsthesia should be avoided for the first two weeks if at all possible.

ALLAN M. DAVIDSON

Sphincterotomy and Splanchnicectomy in the Treatment of Chronic Relapsing Pancreatitis.

P. MALLET-GUY: *A.M.A. Arch. Surg.*, 72: 366, 1956.

Fashions have been changing over the years in the treatment of chronic pancreatitis ever since Archibald, in 1913, established the principle of transduodenal sphincterotomy. When the clinical history, physical examination and roentgenological studies point toward relapsing pancreatitis, systematic surgical exploration is indicated. The entire pancreas should be examined, biopsy and frozen sections done and the wisdom of a palliative by-pass operation discussed. There is a place for left pancreatectomy, and for left splanchnicectomy to interrupt the reflex arc responsible for the recurrences, but the results are difficult to evaluate when a variety of surgeons and techniques are involved. In a personal series of 67 cases, 90% showed favourable results both as to relief of painful episodes and relief from attacks of pancreatitis and gain in weight.

Left splanchnicectomy is done only when the sphincter of Oddi is anatomically and functionally normal. If the sphincter is hypertonic, sphincterotomy is indicated, or vagotomy if it is a labile spasm. If the sphincter is hypotonic, a right splanchnicectomy is indicated.

BURNS PLEWES

Role of Brunner's Glands in the Intrinsic Resistance of the Duodenum to Acid-peptic Digestion.

C. A. GRIFFITH AND H. N. HARKINS: *Ann. Surg.*, 143: 160, 1956.

The explanation for a lower incidence of recurrent ulceration after the Billroth I gastrectomy than after a gastrojejunal restoration of continuity probably depends on many factors: duodenal inhibition, neutralizing bile and pancreatic juices, intrinsic intestinal resistance to ulceration and especially the physiology and distribution of Brunner's glands.

Experiments are described to show the hormonal and vagal control of Brunner's glands which occur in the duodenum, decreasing in number from pylorus to ligament of Treitz, and secrete an alkaline mucus. A Heidenhain pouch experiment shows more gastric acid excreted by dogs with gastrojejunostomies than those with gastroduodenostomies. Exposure of duodenal and jejunal mucosa to an acid-peptic solution also shows an intrinsic resistance to ulceration in the proximal duodenum.

The comparative anatomy of Brunner's glands in dogs, pigs and humans confirms their influence in resistance to peptic ulceration.

BURNS PLEWES

Hormonal Cause of the So-called Varicose Veins of Pregnancy.

P. H. FRIED, P. K. PERILSTEIN AND F. B. WAGNER, JR.: *A.M.A. Arch. Surg.*, 72: 253, 1956.

Superficial varicose veins of the legs complicating pregnancy were found to represent two well-differentiated venous disorders. One is the saphenous varix. The other, which is limited to the pregnant state, is termed "angiectid," and was present in 10% of clinic patients, being nine times the more frequent of the two. The angiectid is a small, intradermal, raised, sharply circumscribed mass of bluish vessels and is painful. Hormone assays were done in 21 patients with angiectids; in those with severe pain, low amounts of œstrogen and pregnanediol were found. Such changes were not found in four patients with saphenous varices. Pain and disability due to angiectids were relieved by female sex hormones by mouth, usually by diethyl-stilbœstrol alone.

The angiectid is differentiated as a hitherto undescribed venous disorder, quite different from and unrelated to saphenous varices. It appears in the first trimester and usually disappears in six weeks.

BURNS PLEWES

OBSTETRICS AND GYNÆCOLOGY

Placenta Prævia

T. W. RODDIE: *Brit. M. J.*, 1: 890, 1956.

A series of 286 consecutive cases of placenta prævia admitted to a hospital in Singapore during 1953 and 1954 is reported. This represents an incidence of 0.7% of all deliveries in the hospital during that period. Nineteen (6.6%) of the cases were in primiparæ. The initial hæmorrhage occurred after the 34th week of pregnancy in 78.3% of cases.

Conservative treatment was adopted where possible. Methods of treatment and results are given. Delivery was by Cæsarean section in 50.4% of cases. The gross fetal loss was 43% and the maternal mortality 2.1%. The six cases of maternal death are summarized.

The dangers of subjecting a patient who has had an antepartum hæmorrhage to vaginal examination are emphasized. The attendant who first sees the patient has a great responsibility. A high incidence of prematurity is unavoidable in cases of placenta prævia; therefore to obtain good results an efficient pædiatric service is essential.

The social problem of poverty and ignorance in Singapore is underlined, and a plea made for educating the public to a better understanding of the aims of obstetrics.

ROSS MITCHELL

Pregnancy and Cardiac Operations.

E. J. IGNA *et al.*: *Am. J. Obst. & Gynec.*, 71: 1024, 1956.

Twenty-two patients subjected to cardiac operations before or during pregnancy are discussed from an obstetrical standpoint. Division of patent ductus arteriosus was performed in one patient when she was 20 weeks pregnant, and in two patients before pregnancy. In all the condition was converted to Class I. The patient operated upon during pregnancy is undelivered, while the other two uneventfully delivered term infants.

The Blalock procedure for tetralogy of Fallot was performed three times. The operative result was not successful in one case. This patient's subsequent two pregnancies were accompanied by critical deterioration in cardiac reserve. Both times the infants were delivered prematurely. In the other two, the condition was improved to Class I. One patient aborted spontaneously when 14 weeks pregnant while the other was delivered uneventfully at term following a normal pregnancy.

There were 16 patients who had mitral stenosis. Commissurotomy was performed during pregnancy in 5 patients, and before pregnancy in 11 patients. Those operated on during pregnancy were upgraded to Class I and remained so during the period of gestation and delivery. Two were undelivered at writing. One was delivered prematurely following spontaneous rupture of the membranes at 7 months, and two delivered normal infants at term.

Pregnancy followed commissurotomy in 9 patients. Two received no surgical benefit and were subjected to hysterectomy during the second trimester. Another improved partially from operation but the cardiac condition deteriorated progressively during pregnancy. She was delivered at term while under strict medical management. A fourth patient suffered deterioration in cardiac reserve and concluded her pregnancy at term while on a strict medical regimen. Of the 7 remaining, all in Class I, two are undelivered, two aborted spontaneously at 3½ months, one was delivered prematurely when 7 months pregnant, and two were delivered at term.

This experience has demonstrated that for all three groups the potential gestational cardiac reserve was most accurately indicated by the degree of improvement resulting from the operation; a successful operative result usually indicated an excellent pregnancy potential, while a lesser result was associated with cardiac deterioration during pregnancy.

ROSS MITCHELL

Effect of Pregnancy on the Course of Heart Disease.

M. M. MILLER AND J. METCALFE: *Circulation*, 13: 481, 1956.

Many studies have been reported evaluating the mortality during pregnancy and the puerperium in women with heart disease. This mortality varies from less than 1% to more than 3% in patients under careful medical management throughout their pregnancies. It appears that the immediate maternal mortality will be influenced by the severity of the heart disease at the time of pregnancy, the previous occurrence of episodes of heart failure, the maternal age, the availability of good medical and obstetrical advice and the co-operation of the patient in accepting this advice.

In this study 106 cardiac patients were restudied 3½ to 5 years after they were observed with pregnancy and heart disease at the Boston Lying-in Hospital. The course was surprisingly good in regard both to survival and to well-being. There were no maternal deaths during pregnancy or in the postpartum period. Three to five years after their pregnancies only 3 of the 106 patients were dead. Sixty-five patients (61%) were functionally unchanged according to the American Heart Association Classification, and 27 patients (26%) showed an improvement in cardiac function. In 5 of this last group the improvement was attributable to cardiac surgical procedures. Only 14 patients (12%) showed progression of heart disease in terms of functional classification. In this group there were only 8 patients with congenital heart disease, and no conclusions are drawn as to the effect of pregnancy on this form of cardiac disability. Several explanations, however, are invoked to explain the relatively benign course of patients with rheumatic heart disease in this study. These include the fact that patients had already passed the period of greatest mortality in the natural history of rheumatic fever; the fact that the patients were selected because they were well enough to become pregnant and to complete their pregnancy; and the fact that adult patients with valvular heart disease may maintain a state of well-being for many years before the intervention of congestive heart failure.

The findings indicate that the altered circulatory dynamics of pregnancy may temporarily decrease functional capacity; but that no permanent change in degree of heart disease can be directly attributed to the pregnancy in this series.

S. J. SHANE

DERMATOLOGY

Muscle Studies in Cutaneous Disease.

P. A. O'LEARY, E. H. LAMBERT AND G. P. SAYRE: *J. Invest. Dermat.*, 24: 301, 1955.

The authors attempt to correlate clinical, histological and electromyographic findings in dermatomyositis, scleroderma, systemic lupus erythematosus and periarteritis nodosa.

The degree of muscle disease was greatest in dermatomyositis, and approximately a third of the patients with generalized scleroderma showed involvement of the muscles, while it was noted to a lesser extent among patients with acrosclerosis. Muscle disease was readily demonstrated among those patients with sclerodermatomyositis. The musculature of 2 out of 9 patients with systemic lupus erythematosus was involved. Electromyographic abnormalities were noted in most patients with periarteritis nodosa.

However, the electrical activity of muscles in patients with dermatomyositis, scleroderma and lupus erythematosus was similar and resembled that noted in myositis without cutaneous disease. The changes in periarteritis nodosa were similar to those in neuritis according to electromyography, and secondary to the vascular lesion according to the pathological findings.

A brief outline of the technique and theory of the use of the electromyograph is also included.

The authors emphasize that in patients with dermatomyositis careful attention must be paid to the muscle which is biopsied. They advocate taking a biopsy from the shoulder girdle group as it is the earliest and most frequently involved. Separate skin biopsies were required when the overlying skin was not clinically involved.

ROBERT JACKSON

Generalized "Ids" (Autosensitization) in Varicose Eczemas.

H. HAXTHAUSEN: *Acta dermat.-venereol.*, 35: 271, 1955.

Of 235 patients with varicose or post-thrombotic eczema, 88 had secondary eruptions (or ids). The basic lesion of these secondary eruptions is usually a vesicopapule, some being more vesicular, others more papular. The eruption is characteristically symmetrical. Of the 88 patients, the arms were involved in 73, thighs and legs in 44, trunk in 43, face in 29, hands in 26, neck in 20 and feet in 11 cases.

The author discusses the pathogenesis under three groups. The first is an allergic reaction to certain substances formed under given circumstances in the individual's own cells, tissues or exudates. The second is an allergic reaction to local infection with bacteria or fungi and the third is an allergic reaction to topically applied medicaments. In some cases all three may be involved.

ROBERT JACKSON

Canad. M. A. J.
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Percutaneous Absorption of Hydrocortisone-4-C^{14} in Two Human Subjects.

F. D. MALKINSON AND E. H. FERGUSON: *J. Invest. Dermat.*, 25: 281, 1955.

The authors demonstrated that percutaneous absorption of hydrocortisone occurred through the normal skin of two patients. They used C^{14} labelled hydrocortisone and measured the radioactivity of the 17-ketosteroid fraction of the urine. The peak excretion of hydrocortisone occurred in the second 24 hours after application, but lower levels of radioactivity persisted throughout the six-day experimental period. ROBERT JACKSON

THERAPEUTICS

Treatment of the Ambulatory Hypertensive Patient With Pentolinium Tartrate.

S. WALDMAN AND L. PELNER: *Am. J. M. Sc.*, 231: 140, 1956.

Pentolinium tartrate proved highly satisfactory for reduction of blood pressure in 26 patients with severe or progressive hypertension during treatment periods varying from three weeks to 11 months. The drug was administered orally three times daily for a total dose of not more than 300 mg., all doses being given half an hour before meals. Reserpine, 0.25 mg., was administered immediately after meals. In all patients, significant falls (not necessarily to normal levels) occurred in systolic and diastolic blood pressure, with the patient seated and recumbent. The cardiac, retinal and coronary status of all patients was improved, whether or not the blood pressure was reduced to levels approaching normal. One patient died of cerebral hæmorrhage, despite a fall in pressure of 36 mm. Hg systolic and 38 mm. Hg diastolic. With proper regulation of the treatment schedule, side-effects were controlled. Meticulous adjustment of dosage is the most important single step in the use of pentolinium. The physiological ganglion-blocking action of pentolinium in interrupting the normal compensatory vasoconstrictor reflex, which comes into play by postural variations, was used as a guide to the most suitable dose for the individual. S. J. SHANE

Pyretotherapy and Subcutaneous Hexamethonium in the Treatment of Severe and Malignant Hypertension.

P. THOMSEN *et al.*: *Circulation*, 13: 351, 1956.

So-called "pyretotherapy" by bacterial vaccines, used alone, is capable of producing major falls in pressure in patients with severe and malignant hypertension, but very frequent injections are required and poorly tolerated by the majority of patients.

Injectable hexamethonium induces hypotension in many patients with severe and malignant hypertension, but habituation to the drug sets in rapidly and necessitates increase of dosage to values producing intolerable effects.

Combination of hexamethonium administration and pyretotherapy has been shown to be capable of markedly lowering pressure levels in patients with severe and malignant hypertension, at the same time improving eye ground and vision, electrocardiogram, cardiac condition and symptoms. This combination has made it possible: (a) to space the pyretic injections so as to render prolonged treatment more tolerable, and (b) to reduce the daily dose of hexamethonium to values that do not cause major side-effects. The source of this advantage is apparently an increased sensitivity to hexamethonium produced by the pyretic injection.

These results are not linked with the temperature rise, since they occur before the latter has appeared, persist after it has disappeared, and are present when fever is prevented with antipyretics.

This treatment appears to be advisable in patients with severe and malignant hypertension resistant to hexamethonium or other therapeutic means now employed. In our experience it has also been useful in cases resistant to combination of hexamethonium and Apresoline. The treatment requires hospitalization of patients and continuous medical supervision.

The pyretogenic substance was Neurovaccine Beta, a water-soluble bacterial suspension containing in 1 c.c., 50 million *B. pyocyaneus*, 52.5 million *Staph. aureus* and 25 million *B. prodigiosus*. As hypotensive agents, injectable hexamethonium bromide and chloride were used. After termination of treatment, and with the hope of maintaining the favourable effects produced, therapy was continued with Apresoline and oral hexamethonium.

S. J. SHANE

Studies on Elorine Sulfate, an Anticholinergic Drug.

W. H. BACHRACH AND H. SCHAPIRO: *Am. J. M. Sc.*, 231: 192, 1956.

Observations are reported on an anticholinergic drug, Elorine sulfate (1-cyclohexyl-1-phenyl-3-pyrrolidino-1-propanol methylsulfate), which was administered to some 150 individuals in an investigation of its physiological and clinical characteristics.

Elorine sulfate inhibits gastrointestinal motility in single doses of 10 to 20 mg. parenterally and 150 to 200 mg. orally. The same doses depress the basal and histamine-stimulated gastric secretion but not the secretion stimulated by food or insulin. Addition of Elorine sulfate to a regimen of intensive neutralization gives complete relief of symptoms in 60% of ulcer patients, but does not delay or prevent recurrences after therapy is discontinued. The clinical dose of Elorine sulfate is usually 100 mg. or more every 3 or 4 hours. A bedtime dose of 150 to 200 mg. is recommended.

Side-effects are almost invariably present but are only occasionally troublesome at therapeutic doses. Intolerance to the drug because of adverse local or general reaction occurs in about 10% of patients.

Elorine sulfate is comparable, in its physiological and clinical characteristics, with natural anticholinergic drugs and other synthetic anticholinergics investigated.

S. J. SHANE

Evaluation of a New Anticoagulant, Acenocoumarin (Sintrom).

M. WEINER, M. JIMINEZ AND I. KATZKA: *Circulation*, 13: 400, 1956.

Sintrom, a new coumarin anticoagulant, has been compared with other oral anticoagulants in single doses in the same individuals. It acts more rapidly than dicoumarol and somewhat more slowly than Tromexan. In this respect, it closely resembles phenylindanedione.

Clinical experience with 444 patient-days of treatment in 15 subjects indicates that a desired degree of hypoprothrombinæmia can be rapidly obtained and effectively maintained with this compound. In only one individual were prothrombin time fluctuations so rapid as to make control difficult. No toxic manifestations were noted except for one instance of hæmaturia, controlled by discontinuing therapy.

The properties of Sintrom permit a relatively rapid onset and recovery of hypoprothrombinæmia with less likelihood of the very rapid fluctuations of prothrombin time which sometimes results from more rapidly metabolized drugs. In this sense, it strikes a balance between slow, long-acting compounds (dicoumarol, Marcoumar, Warfarin, Coumopyrin) and the very fast, short-acting compound, Tromexan.

In terms of milligrams, Sintrom is 25 times as potent as phenylinanedione. S. J. SHANE

OBITUARIES

DR. ROLAND HILL, 88, surgeon at St. Louis, Mo., for 60 years, died in St. Luke's Hospital, St. Louis, on May 27. He was born in Luton, Ont., and graduated from the University of Toronto.

Dr. Hill is survived by his widow and a son.

DR. A. T. LEFTON, 48, a general practitioner at Kitchener and Waterloo, Ont., died suddenly on June 13 after a heart attack. He graduated from the University of Toronto in 1933, and set up practice in Kitchener. He had been practising in Waterloo for six years.

Dr. Lefton is survived by his widow, a son and a daughter.

DR. MALCOLM JOHN MORISON, a general practitioner and county coroner at Kingston, Ont., for many years, died at his home there on May 23. He was born at Ottawa. After serving in France during World War I, he graduated from Queen's University, Kingston, in 1923. He was a surgeon for 18 years, until a hand infection forced him to abandon surgery and enter general practice.

Dr. Morison is survived by his widow.

DR. RICHARD CHAPMAN WELDON, 73, a general practitioner at Vancouver, B.C., died on June 23. He was born at Sackville, N.B., and graduated from McGill University in 1906. After doing postgraduate work in the United States and in Europe, at Vienna, Edinburgh and London, Dr. Weldon set up practice at Hosmer, B.C. For 24 years he was Canadian Pacific Railways doctor at Vancouver.

He is survived by his widow, son and daughter.

DR. GEORGE S. YOUNG, 85, a well-known Toronto physician, died at his home in Toronto on June 15. He was born at Aultsville, Ont., and graduated from the University of Toronto in 1895. He set up practice in Toronto in 1909, specializing in internal medicine. Dr. Young was a past president of the Royal College of Physicians and Surgeons of Canada. For some years he served the Canadian Medical Association as chairman of council. He was associate professor of medicine and consultant to the Toronto General Hospital and East General Hospital. Dr. Young was also a member of the Ontario Foundation for Cancer Treatment and Research and was appointed by the Ontario Government to the Royal Commission to investigate cancer remedies in 1938.

Dr. Young is survived by his widow, four sons and a daughter.

FORTHCOMING MEETINGS

CANADA

INDUSTRIAL SECTION, ONTARIO MEDICAL ASSOCIATION, AND INDUSTRIAL MEDICAL ASSOCIATION OF THE PROVINCE OF QUEBEC, Combined Annual Meeting, Hamilton, Ontario. (Dr. Glenn Sawyer, Executive Secretary, Ontario Medical Association, 244 St. George Street, Toronto, Ont.) September 26-28, 1956.

UNITED STATES

INTERNATIONAL CONGRESS OF HEMATOLOGY, Boston, Massachusetts. (International Society of Hematology, New England Center Hospital, Harrison Avenue at Bennett Street, Boston 11, Mass.) August 26-September 1, 1956.

SIXTH INTERNATIONAL CONGRESS OF BLOOD TRANSFUSION, Boston, Massachusetts. (Professor I. S. Ravdin, President, New England Medical Center, Harrison Avenue, Boston 11, Mass.) August 29-September 2, 1956.

FIRST INTER-AMERICAN CONFERENCE ON OCCUPATIONAL MEDICINE AND TOXICOLOGY, Miami, Florida. (Dr. Homer F. Marsh, Dean of the School of Medicine, University of Miami, Fla.) September 3-7, 1956.

INTERNATIONAL COLLEGE OF SURGEONS, 10th International Congress, Chicago, Illinois. (Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Ill.) September 9-13, 1956.

INTERNATIONAL CONGRESS OF CLINICAL CHEMISTRY, New York, N.Y. (Mr. J. C. Reinhold, 711 Maloney Building, Hospital of the University of Pennsylvania, Philadelphia 4, Pa.) September 9-14, 1956.

OTHER COUNTRIES

EIGHTH INTERNATIONAL CONGRESS OF RADIOLOGY, Mexico City, Mexico. (Secretariat, I.C.R., Calle del Oro, 15, Mexico, D.F.) July 22-28, 1956.

20TH INTERNATIONAL PHYSIOLOGY CONGRESS, Brussels, Belgium. (Professor J. Reuse, Faculté de Médecine et de Pharmacie, 115 Boulevard de Waterloo, Brussels.) July 30-August 5, 1956.

FIRST INTERNATIONAL CONGRESS OF HUMAN GENETICS, Copenhagen, Denmark. (The University Institute for Human Genetics, Tagensvej 14, Copenhagen.) August 1-6, 1956.

EIGHTH INTERNATIONAL CONFERENCE OF SOCIAL WORK, Munich, West Germany. (J. R. Hoffer, 345 East 46 Street, New York 17, N.Y.) August 5-10, 1956.

WORLD FEDERATION FOR MENTAL HEALTH, Ninth Annual Meeting, Berlin, West Germany. (The Secretary, W.F.M.H., 19 Manchester Street, London, W. 1, England.) August 12-18, 1956.

FOURTH INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Cologne, West Germany. (Dr. Murray Kornfeld, American College of Chest Physicians, 112 Chestnut Street, Chicago 11, Ill.) August 19-23, 1956.

SECOND INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, Copenhagen, Denmark. (Dr. B. Strandberg, Koebnhavns Amts Sygehus i Gentofte, Hellerup, Denmark.) August 20-24, 1956.

SECOND INTERNATIONAL CONGRESS OF DIETETICS, Rome, Italy. (Dr. Margaret A. Ohlson, The American Dietetic Association, 620 North Michigan Avenue, Chicago 11, Ill.) September 10-14, 1956.

EUROPEAN SOCIETY OF CARDIOLOGY, Second Congress, Stockholm, Sweden. (Professor K. E. Grewin, Södersjukhuset, Stockholm.) September 10-14, 1956.

25TH INTERNATIONAL CONGRESS AGAINST ALCOHOLISM, Istanbul, Turkey. (Bureau International contre l'Alcoolisme, Case Gare 49, Lausanne, Switzerland.) September 10-15, 1956.

SEVENTH INTERNATIONAL CONGRESS OF CATHOLIC DOCTORS, The Hague, The Netherlands. (Dr. Weebers, Nikmwegen, Holland.) September 10-16, 1956.

SIXTH INTERNATIONAL CONGRESS OF HYDATID DISEASES, Athens, Greece. (Professor B. Kourias, Croix-Rouge Hellenique, 1 rue Mackenzie King, Athens.) September 14-16, 1956.

FOURTH INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain. (Sociedad Espanola de Medicina Interna, Montalera 90, Madrid.) September 19-23, 1956.

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PROVINCIAL NEWS

BRITISH COLUMBIA

For the past two years, Dr. G. H. Stevenson, well-known Canadian psychiatrist, has been conducting an exhaustive enquiry into the problem of drug addiction, especially as it concerns British Columbia. He has now brought down his report—a very full, carefully documented one in two large volumes, giving a thorough analysis of conditions as they exist here.

He deals especially with the question of rehabilitation and the treatment of drug addiction. As regards the latter, he takes a definite stand against drug clinics or any system whereby the addict is provided with drugs legally.

The Annual Summer School of the Vancouver Medical Association was held from June 4 to 8 inclusive, and was an outstanding success. The meetings were held in Stanley Park Pavilion, and were crowded. The attendance surpassed all previous records, over 270 registrations being made; men attended from all parts of British Columbia. The addresses were excellent, as might be expected from the list of speakers. Round table discussions, clinics and other events were very popular features of the school.

Great credit is due to the committee which organized this school; they have set a standard which will be difficult to surpass.

Research grants of $40,260 have been awarded to three Vancouver scientists by the Life Insurance Medical Research Fund of New York, all being given for research work in heart disease. Those given grants are: (1) Dr. H. Gobind Khorana of the B.C. Research Council, who received $22,000 for research on his synthetically prepared co-enzymes. (2) Dr. E. E. Daniel, of the University of B.C. Medical School, who receives $11,000 to be devoted to work on the role of chemical changes in arterial muscle in high blood pressure. (3) Dr. Paris Constantinides, also of the University of B.C. Medical Faculty, who has been successful in synthesizing a chemical which arrests artificially induced arteriosclerosis in rabbits, and is now working towards the application to coronary sclerosis and other arteriosclerosis in human beings, will be given $7,260 towards his work.

Ladysmith General Hospital Directors are planning a new hospital for Ladysmith to cost some $250,000, and have called for tenders to this end, subject to the approval of the B.C. Hospital Insurance Service.

Prince George is planning a new home for nurses for its new hospital—it will cost $165,000 and will accommodate 55 nurses. It is to be built in conjunction with the proposed $2,500,000 district hospital.

The new B.C. Heart Foundation is becoming a very active organization in B.C. and is gradually exciting public interest and support.

An instance was the recent gift by the Vancouver Chapter No. 119 of Aleph Zadick Aleph of the B'nai Brith organization, of a cheque for $160, raised largely by the Vancouver Chapter Tama No. 260, of B'nai Brith girls.

This well-known organization has been raising money for charitable purposes for 28 years, and has contributed generously to various very worthy causes.

The work of the Victorian Order of Nurses in B.C. is growing steadily and more nurses are needed. This matter is under the earnest consideration of the headquarters of the V.O.N. in Ottawa, and additional scholarships and bursaries have been created as an aid to securing more staff.

J. H. MACDERMOT

At the annual convention of the Western branch of the American Public Health Association, held at Salt Lake City recently, Dr. G. R. F. Elliot of Vancouver, B.C., was chosen as President-Elect for the coming year.

ALBERTA

Dr. E. S. Orford-Smith, medical health officer for the Sturgeon Health Unit since 1953, has been appointed Director of the Communicable Disease Division of the Provincial Health Department. This appointment fills the gap which was occasioned by the death of Dr. C. A. Anderson four months ago. Dr. Orford-Smith had previous experience with the Department when, during the polio epidemic of 1953, he was lent by the Health Unit to carry out statistical research on the epidemic.

Dr. R. Foster Scott, who is at present in the Department of Clinical Pathology at Vancouver General Hospital, has been awarded a Life Insurance Medical Research Fund fellowship for study with Dr. W. Stanley Hartroft at Washington University School of Medicine, St. Louis, Missouri. Dr. Scott, who is the son of the Dean of Medicine at the University of Alberta, graduated from that University in 1951 and later studied at the Postgraduate School, Hammersmith Hospital, London, England, through fellowships from the National Research Council and the Nuffield Foundation.

The City of Edmonton has found that its first Clinic-Library Unit has worked out so well that they are proceeding with plans for at least one more such unit. The advantages achieved are economy and service.

The building is a split-level structure, with well-baby and inoculation clinics at ground level. The remainder of the building consists of a large basement which houses the public health dental clinic and various service rooms; above this is the library space. The entrances to the library and the clinics are side-by-side and the basement area is accessible from both departments.

The popularity of non-ratepayer contracts in Alberta is testified to by the fact that in Edmonton more than 25,000 residents are covered by these contracts. The contracts, issued under the city-provincial scheme, cost $14.00 a year for either single persons or families, and entitle the holder to hospitalization, including such services as laboratory, operating room and most drugs, for $2.00 a day. The contracts can now be bought at any time, subject to a 60-day waiting period. The same conditions hold throughout the province.

Dr. W. Carleton Whiteside of Edmonton is leaving that city in July to take up residence near Victoria, B.C., where he will continue to practise his specialty of chest surgery. Dr. Whiteside, who began practice in Edmonton in 1932, was a pioneer in chest surgery in Alberta. He is of a literary bent and, as well as acting as Alberta correspondent for the *Canad. M. A. J.* and Editor of the *Alberta Medical Bulletin*, has published several volumes on his extensive travels.

Dr. R. Randall MacLean, Director of Alberta's Division of Mental Health, was the principal speaker at a banquet at the sixth annual meeting of the Canadian Council of Psychiatric Nurses' Associations. Other speakers were Dr. T. C. Michie, Medical Superintendent of the Provincial Mental Hospital at Ponoka, and Dr. A. Donald McPherson, Medical Superintendent of the Provincial Mental Institute at Oliver.

The Canadian Council was formed to raise the standards of psychiatric nursing. At present only three provinces, British Columbia, Saskatchewan and Alberta, send delegates to the Council.

14 different symptoms in 14 different patients

*pointed to a single diagnosis—**depression***

Watts[1] saw varied, ill defined, and apparently
unrelated symptoms—such as the
ones below—in 14 of his patients:

insomnia—
fainting—
pain in chest—
indigestion—
fatigue—
dizzy spells—
cough—
asocial behavior—
fear of being alone—
weeping bouts—
loss of interest in job—
irritability—
chronic invalidism—
heavy drinking.

For each of these patients
he made the same
diagnosis: depression.

Watts found—as countless
other physicians have
discovered—that when
he specifically treated
these patients for depression,
their miscellaneous
psychosomatic complaints vanished.

'Dexedrine Spansule'
capsules assist in
restoring such patients
to normalcy by providing
day-long relief from depression,
renewing interest and optimism
and restoring the capacity
for physical and mental effort.

S.K.F.'s 'Spansule' capsules are the only
sustained release oral preparations accepted by
the A.M.A. Council on Pharmacy and Chemistry.

Dexedrine* dextro-amphetamine sulfate, S.K.F.

Tablets • Elixir • Spansule* Capsules (*brand of sustained release capsules*)

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1. Brit. M. J. 1:11, 1947.

*Reg. Can. T. M. Off.

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The University of Alberta Hospital has been awarded a Federal health grant of $4,500 for the purchase of an electroencephalograph to replace the one which has been in use since 1945. The new machine is of an advanced type, giving eight simultaneous readings.

The speaker at the June meeting of the Edmonton Academy of Medicine was Professor Ian Aird, Professor of Surgery, Post-Graduate Medical School, Hammersmith, London, England, who was invitation lecturer at the Annual Summer School of Medicine in Vancouver, B.C. Professor Aird spoke on surgery of the adrenal and parathyroid glands, illustrating his interesting talk with excellent films.

W. B. PARSONS

SASKATCHEWAN

Former medical members of the Saskatchewan Cancer Commission and consultants to the staffs of the Saskatoon and Regina Clinics were honoured at a dinner meeting in the Hotel Saskatchewan, Regina, on May 18.

The meeting was held under the auspices of the Regina and District Medical Society as a part of a three-day program devoted to symposia on cancer and jaundice presented by the Allan Blair Memorial Clinic and sponsored by the Canadian Cancer Society, Saskatchewan Division, and the College of Physicians and Surgeons of Saskatchewan.

Former medical members of the Cancer Commission honoured were Dr. F. C. Middleton and Dr. R. O. Davison of Regina; Dr. A. J. McDougal of Indian Head; Dr. A. C. Scott, Victoria, B.C.; Dr. J. E. McGillivray of Weyburn and Dr. H. D. Dalgleish of Saskatoon. Dr. Middleton was Deputy Chairman and Secretary of the Commission from 1934 to 1946; Dr. McDougal was Acting Secretary during the first part of 1946, when he became Secretary and continued to act in this position until 1948; Dr. Davison was Deputy Chairman from 1930 to 1933 and Chairman from 1934 until 1944; Dr. Scott was a Commissioner from June 1945 until 1948 and Dr. McGillivray served as a Commissioner from 1948 until 1954. Dr. Dalgleish was a Commissioner from 1946 until 1949. Dr. Scott and Dr. McGillivray were unable to attend the dinner.

Tribute was paid to former medical members of the Regina Clinic Staff: Dr. H. C. George of Regina, the Director of Cancer Services from 1939 to 1945; Dr. S. E. Moore of Regina, Consultant from 1933 to 1935; Dr. H. M. Stephens of Regina, Consultant from 1934 to 1935; Dr. J. C. Patterson, now of London, Ont., Consultant from 1937 to 1938; Dr. R. C. Reilly, now of Calgary, Consultant from 1931 to 1934.

Former medical members of the Saskatoon Clinic honoured were: Dr. D. M. Baltzan, Dr. G. R. Peterson, Dr. L. H. McConnell, Dr. E. W. Spencer and Dr. W. S. Lindsay, all of Saskatoon; Dr. E. E. Shepley of Vancouver and Dr. A. Croll of Toronto.

Dr. Baltzan was Consultant to the Saskatoon Clinic from 1932 to 1933, Dr. Shepley from 1932 to 1938, Dr. Peterson from 1932 to 1945, Dr. McConnell from 1935 to 1936, Dr. Spencer from 1939 to 1940, Dr. Lindsay from 1932 to 1947 and Dr. Croll during 1934.

Dr. Claude Hitchcock, Associate Professor of Surgery at the University of Minnesota, Minneapolis, was the guest speaker at the dinner and took as his topic, "Cancer Detection". The Chairman of the meeting was Dr. N. H. Smith, President of the Regina District Medical Society.

The Saskatchewan Air Ambulance Service set a new record for patient-flights in March, when 114 were completed, bettering by two the former record set in August 1955. The month also marked the fourth successful delivery made on board an Air Ambulance craft, when a baby was born during a flight from Cando to North Battleford. Of the 114 flights completed during March, 76 were carried out by the Saskatoon base and 38 by the Regina base.

A $240,000 home for the aged, to be called Jubilee Lodge, is being planned by the Town of Eston and nearby municipalities according to a recent announcement by the Welfare Minister, J. H. Sturdy. The home, expected to be built this year, will accommodate approximately 70 aged persons, with plans including 20 self-contained units for married couples and a hostel-type area for 30 single persons. The Provincial Government will provide a grant of 20% of the construction costs and once the home is in operation an annual grant of $40 per bed.

At the recent meeting of the Saskatchewan Surgical Society the following officers and directors were named: Past-President, Dr. A. L. Caldwell, Saskatoon; President, Dr. C. H. Crosby, Regina; Vice-President, Dr. B. A. Jackson, Saskatoon; Secretary, Dr. M. Fraser, Regina.

The Directors for the next year are: Dr. J. H. Wilfong, Moose Jaw; Dr. L. E. Cowan, Regina; Dr. H. J. Spooner, Regina; Dr. J. Leddy, Saskatoon; Dr. E. R. Peterson, Saskatoon; Dr. F. L. Eid, Macklin.

ONTARIO

There are indications that 1956 will be another year of low poliomyelitis incidence in Ontario. Up to June 12, only six cases were reported to the Ontario Department of Health, compared with 20 at the same time in 1955. Of the six patients this year none had been given vaccine in last year's initial polio immunization program. The Ontario program for polio vaccination this spring was in its final stage by mid-June. More than a million doses of vaccine were given before the school term ended.

Further supplies will become available in the fall and if these supplies come up to expectation another year should see the majority of children between the ages of six months and 18 or 19 years vaccinated.

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NEW BRUNSWICK

Dr. John R. Nugent, Saint John Surgeon and Chairman of the N.B. Provincial Cancer Advisory Committee, and Dr. J. A. Melanson of Fredericton, Chief Medical Officer of the N.B. Department of Health, and President of the Canadian Public Health Association, both received honorary degrees of Doctor of Science at the May 31 convocation of St. Joseph's University.

Senator F. A. McGrand, M.D., was the special speaker at the Annual Meeting of the N.B. Division of the Canadian Mental Health Association held this year in Moncton. Senator McGrand was a former Minister of Health for New Brunswick.

At the Annual Meeting of the New Brunswick Section of the Maritime Hospital Association held in St. Andrews, Dr. A. M. Clarke was elected chairman for the next year. Dr. D. F. W. Porter was elected to the executive.

The Canadian Public Health Association, at their Annual Meeting in Saint John, presented a life membership certificate to Dr. J. P. Richard of Petit Rocher, N.B., for his achievement in the public health organization that was outstanding in the area in which he served.

Dr. A. M. Sormany of Edmundston was made a Senior Member of the Canadian Medical Association at the Association's Annual Meeting at Quebec. Dr. Sormany has had a long life of service in medicine, the humanities and music.

Dr. A. F. Chaisson, Director of Communicable Disease Control, Department of Health of New Brunswick, presented a paper at the First International Symposium on Venereal Disease and the Treponematoses which took place at the Statler Hotel in Washington, D.C., late in May.

The College of General Practice of Canada has attracted the attention of an increasing group of physicians in New Brunswick. The first annual meeting of the New Brunswick Chapter of the College was held in the Hôtel-Dieu Hospital in Moncton on May 30.

Dr. C. A. Gordon, internist from Halifax, conducted ward rounds in the morning session and in the afternoon discussed "Chronic Cough". Dr. W. R. C. Tupper of Halifax spoke on "Natural Childbirth" and also led a panel discussion on "Management of Difficult Labour" assisted by Dr. Paul Melanson and Dr. A. J. Delaney. Dr. R. O. Jones, psychiatrist, of Halifax, speaking at the dinner meeting held in the evening at the Brunswick Hotel, was most interesting in his submissions on "Psychotic Reactions".

The business session of the Chapter was called before lunch.

Several groups of interested doctors have been gradually feeling their way in negotiations with their local hospitals regarding the service offered by general practice and the status they may anticipate in the institutions. Following this meeting, progress may be hastened.

A. S. KIRKLAND

CANADIAN ARMED FORCES

Brigadier S. G. U. Shier, O.B.E., C.D., Director General of Medical Services (Army), has been appointed Honorary Physician to Her Majesty Queen Elizabeth II.

Major F. S. Hogarth, R.C.A.M.C., has been selected for a special course in radiobiological studies to begin at Reed College, Portland, Oregon, July 1956. He has just completed a year's training at Brooke Army Hospital, Fort Sam Houston, Texas.

Major E. Karpetz goes to the Division of Surgery and Captain R. C. Daigle to the Division of Medicine at Brooke Army Hospital, on July 1, 1956, for one year's training.

BOOK REVIEWS

THE PSYCHOSOMATIC GENESIS OF CORONARY ARTERY DISEASE. D. C. Peete, Associate Clinical Professor of Medicine and Lecturer in the History of Medicine, University of Kansas School of Medicine, Kansas City. 220 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955. $8.50.

Where this work should be placed in the realm of medical literature is not at once obvious. The title suggests that it might be a textbook or a comprehensive treatise on arteriopathic cardiac conditions, but it has too much special pleading to be a safe textbook, and it is not complete enough to serve as a source of reference.

Perhaps it is not too fanciful to find the book somewhat like the form of examination that a candidate for a degree in a mediæval university faced in defence of some theory chosen by himself or assigned by the examing body. In this book the theory put forward is that nervous imbalance is a constant, even a predominant, factor in the onset and the continuance of arterial deterioration and shows itself most frequently in a feeling of insecurity. Numerous clinical instances are given to bolster the theory, but the appraisal of these proffered proofs will depend somewhat on the susceptibility of the readers. Undoubtedly whatever of value the theory has will in time appear, but in the meantime the skeptic may argue that a feeling of insecurity is not a sign of mental disturbance—it might be presumptive evidence of sanity, for the paretics and the schizophrenics are usually free of all doubts about themselves or their surroundings.

Although there are some noticeable defects—the chief being a sort of aimlessness as if the author had not planned in advance the form the book was to take—there are several features of merit. From facts, from theories, and from the literature, a miscellany has been formed in which there are bits of eclectic history, Biblical quotations, abstract science and clinical medicine. Few readers will already know all that may be found in the book, for much of the contents does not come under the heading of essential knowledge, but the well-informed should gain the pleasure that comes from meeting again the tags of learning paraded in undergraduate days. Those who wish to browse in the fields forbidden or scorned in youth will find this an inviting entry.

DISEASES OF THE ENDOCRINE GLANDS. L. J. Soffer, Clinical Professor of Medicine, State University of New York, College of Medicine, New York. 2nd ed. 1032 pp. Illust. Lea and Febiger, Philadelphia; The Macmillan Company of Canada, Limited, Toronto, 1956. $16.50.

This book first appeared in 1950 as a clinical guide to the diseases of the endocrines, and was well received. The new edition has been brought well up to date, but no longer contains an account of carbohydrate metabolism and diabetes mellitus. This is in line with the current tendency to separate diabetes off from the other endocrine disorders.

This is essentially a clinician's book. There is little about laboratory and experimental work, except in so far as it is needed for the understanding of the diagnosis and therapy of endocrine diseases. Emphasis is laid on the management of patients, and the advice for treatment is very detailed. The largest section of the book deals with the adrenals, which Dr. Soffer discusses in great detail. He gives a very practical account of the diagnosis, treatment and prognosis in adrenal disease. The section on the gonads is contributed by a colleague, Dr. Sohval, and includes a helpful chapter on the virilizing syndrome. The bibliography is extensive and well chosen. As befits a book on endocrinology, there are many illustrations of patients. There are also some case histories. An appendix contains instructions for carrying out the laboratory tests associated with endocrine disease. The monograph is well written and well produced.

ATLAS OF BRONCHIAL LESIONS IN PULMONARY TUBERCULOSIS. C. Dijkstra, Medical Superintendent of the Sanatorium "De Klokkenberg", Breda, The Netherlands. 128 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955. $13.25.

This monograph is designed to emphasize the importance of the bronchial element in the pathology of pulmonary tuberculosis and to indicate its clinical significance. The author states his views on the pathogenesis of the various types of bronchial lesion in a concise manner, supporting his points by 30 brief case presentations, each illustrated by reproductions of radiographs, photographs of the specimens removed at operation, and by photomicrographs.

The author's interest in the subject has led him to classify the bronchial changes to what appears to be an artificial degree, but nevertheless he has performed a useful service in redirecting attention to this important feature of the pathology of lung tuberculosis, which although constantly present is not always recognized.

The photographs, particularly of the gross specimens, are beautifully executed and reproduced. The book will be of interest and value to all those concerned with either the pathological or clinical aspects of pulmonary tuberculosis.

SHOCK AND CIRCULATORY HOMEOSTASIS. Transactions of the 4th Conference, December 1954. Edited by H. D. Green, Professor of Physiology and Pharmacology, Bowman School of Medicine, Winston-Salem, North Carolina. 291 pp. Illust. The Josiah Macy, Jr. Foundation, New York, 1955. $5.00.

This is the fourth volume of this series of conferences sponsored by the Josiah Macy, Jr. Foundation. The pattern followed in all the conferences has become familiar to a great many readers of current medical literature. The principal subjects presented were the action of epinephrine in man, circulation in the periphery, mesenteric lymphatic dynamics in the rat, circulation in the splanchnic area, the pulmonary circulation, the pulmonary circulation in hæmorrhagic shock, and the aortic and coronary blood flow by Barcroft, Montgomery, Baez, Myers, Cournand, Merriman and Gregg respectively.

Readers who are interested in the dynamic aspects of the circulatory system and in the control of fluid exchange will be interested and stimulated by the presentations themselves, and by the spirited discussions following them. Much of the work reported consisted of observations on human subjects. These point out the way in which a better understanding of shock and homœostasis is being acquired, but suggest also that there are many gaps in existing knowledge.

CLINICAL LABORATORY DIAGNOSIS. S. A. Levinson, Director of Laboratories, University of Illinois Research and Educational Hospitals, Chicago, and R. P. MacFate, Chief, Division of Laboratories, Board of Health, City of Chicago, Ill. 5th ed., revised. 1246 pp. Illust. Lea and Febiger, Philadelphia; The Macmillan Company of Canada, Limited, 1956. $12.50.

It is hardly necessary to review a standard volume such as this. The fact that it has gone into a fifth edition speaks well for its general acceptance. The 1,246 pages included make this book a large one, but at the same time serve to increase the amount of information it contains. In many cases not one but several methods of doing a particular test are given, with references conveniently located at the bottom of the page.

The authors say "the objective of this book is to present to the medical student, intern, the resident physician and the practicing physician, as well as the medical technologist, a suitable review of clinical laboratory diagnosis sufficient to meet their general needs". They might also have said clinical laboratory methods of diagnosis, for this is the type of text that would enable any physician or medical technologist to perform those tests ordinarily required in a hospital laboratory. At the same time it serves as a good reference for the experienced laboratory worker in dealing with those tests which he is asked to perform only rarely.

ESSENTIALS OF DERMATOLOGY. N. Tobias, Dermatologist, St. Louis State Hospital. 651 pp. Illust. 5th ed. J. B. Lippincott Company, Philadelphia and Montreal, 1956. $8.00.

Dermatology is still to a large degree an art, and as such has to be practised to be learned. It is difficult to write a detailed book about any art, and still more difficult to write a book covering only the essential points. Imagine a short, readable book on the essentials of the Beethoven symphonies. So, in evaluating any short book on dermatology, it must be remembered that the writing of such a book is inherently difficult. In the reviewer's opinion the author has been moderately successful.

Some of the features which would be helpful to the non-dermatologist are the numerous tables of differential diagnoses, the references scattered throughout the text and the list of books at the back, the separate chapter on dermatitis of the hands, and the relatively adequate coverage of the common skin conditions. Some of the features which would be least helpful are the inclusion of many dermatological rarities such as pyoderma faciale, xeroderma pigmentosa, keratoderma blenorrhagica, nævo-xantho-endothelioma and sclercedema adultorum; long lists of possible treatments with no indication as to which treatment is superior; the omission of a photograph showing a positive potassium hydroxide smear; and the use of both terms, eczema and dermatitis.

The calibre of the dermatology is generally good, with a few exceptions. Surely earrings should be mentioned as a cause of contact dermatitis on the ears. Linear lesions are not mentioned in connection with poison ivy dermatitis. Seborrhœic keratoses are not usually classified as precancerous conditions. Some of the photographs are good, others poor. This book is not intended as a standard reference book, nor for use by dermatologists.

In summary, this book has reasonably well achieved the purpose for which it was intended.

THE NON-VENEREAL DISEASES OF THE GENITALS. Etiology, Differential Diagnosis and Therapy. Fritz T. Callomon, Philadelphia, and John F. Wilson, Assistant Professor, Dermatology and Syphilology, Jefferson Medical College, Philadelphia, Pa. 382 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $13.75.

Written by two dermatologists, this book will be read with much interest and appreciation by general practitioners and specialists in different fields of medicine. It gives the most complete review of regional pathology, diagnosis and treatment, and will be of much practical help in dealing with the many diagnostic problems encountered in this area of the body.

Besides the usual diagnostic difficulties, involvement of the genitals presents in many patients an additional complication due to the apprehension of a possible venereal etiology of their condition. The detailed description of a great variety of non-venereal eruptions of the genitals will clarify the practitioner's mind and help him to deal with a worried patient. Besides dermatological entities, the reader will find a clear description of non-specific urethritis, affections of the lymphatic system, malignancies, and diseases of the testis, epididymis and spermatic cord.

The authors have accomplished much in presenting a complete, stimulating and easily read handbook. The printing is excellent, the illustrations are well chosen, and the bibliography (at the end of each chapter) is very adequate.

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GYNECOLOGY, SURGICAL TECHNIQUES. R. J. Lowrie, Associate Clinical Professor of Medicine, New York University, New York. 523 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955. $19.50.

This book follows a previous volume entitled *Gynecology—Diseases and Minor Surgery*. On the whole, it is an improvement, mainly because it is written strictly for the graduate, whereas the previous publication attempted to appeal to such a wide medical population that it was unsuccessful in satisfying the needs of any one group.

This is a text of operative gynæcology. The editor makes a point of presenting a variety of techniques for various disorders, which is helpful. The work is profusely illustrated and for the most part the quality is excellent. The text has been kept short, an advantage in the description of routine procedures when coupled with a series of good illustrations. However, the brevity is a distinct disadvantage in the sections dealing with radical pelvic surgery, and renders this section of little practical value to the serious operator in either the selection or performance of suitable procedures. The section on injuries to the urinary tract is possibly the most useful to the practising gynæcologist.

Many of the contributors are authorities in their field, but there is a variation in quality difficult to avoid in a collection of this type. It is a useful book, but it is not a great book.

POSTGRADUATE OBSTETRICS AND GYNÆCOLOGY. F. J. Browne, Emeritus Professor of Obstetrics and Gynæcology, London University, and J. C. McClure Browne, Professor of Obstetrics and Gynæcology, London University, England. 2nd ed. 725 pp. Illust. Butterworth & Co., Ltd., London, 1955. $14.00.

Those familiar with the lucid writings of Professor F. J. Browne, the London obstetrician, will be interested to know that a second edition of the book "Postgraduate Obstetrics and Gynæcology" has recently appeared. The first edition of this book appeared in 1950 and was put together from material selected from talks given by the author to doctors specializing or intending to specialize in obstetrics and gynæcology. In the main, the author has avoided topics which are discussed in his other well-known book "Antenatal and Postnatal Care". The present edition of the book has been written in conjunction with his son, Dr. McClure Browne, and has undergone a complete revision. Four new chapters appear. There is a short chapter on acquired afibrinogenæmia in pregnancy, a short chapter on changes in the vascular system in normal pregnancy, and chapters on sterility and impaired fertility and on pain in gynæcology. The style of the book is, as in other writings by F. J. Browne, terse and clear. An enormous number of facts are packed into a small compass. There is an extensive bibliography to all the chapters. Taken in conjunction with his book "Antenatal and Postnatal Care", the whole of postgraduate obstetrics and gynæcology is covered with very few exceptions.

GESTATION. Transactions of the Second Conference, March 8, 9 and 10, 1955. Edited by Claude A. Villee, Assistant Professor of Biological Chemistry, Harvard Medical School, Cambridge, Mass. 262 pp. Illust. The Josiah Macy, Jr. Foundation, New York, 1956. $5.00.

This book comprises the collected communications of the participants attending the Second Josiah Macy, Jr. Foundation Conference on Gestation. Many facets of the physiology and psychology of pregnancy are presented and discussed by experts in this field.

There is no attempt to integrate the various presentations. However, the inclusion of comments of the members during the free discussion of each presentation tends to correlate the apparently disparate contents. The latter half of the book dealing with uteroplacental circulation is a most commendable feature.

The numerous illustrations, tables and graphs, as well as the comprehensive bibliographies, make it a particularly informative guide for those investigating the basic problems of gestation and lactation.

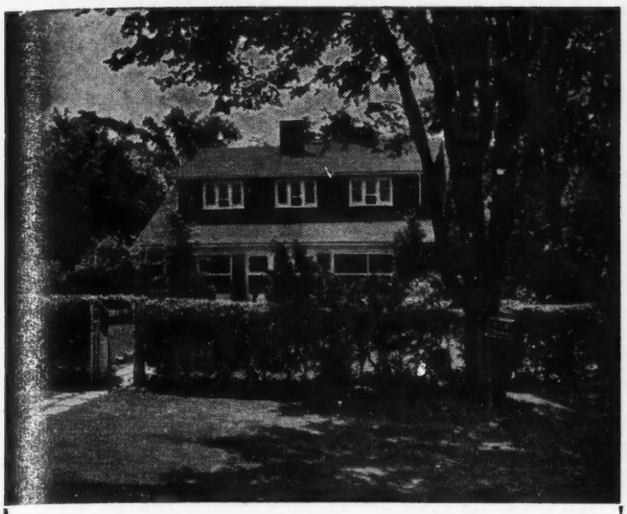
BREAST FEEDING. F. Charlotte Naish. 2nd ed. 161 pp. Illust. Lloyd-Luke (Medical) Books Ltd., London, 1956. -/12/6.

This book makes a very strong case for breast feeding of infants and is written for mothers, general practitioners and in fact all who have newborn infants under their care. All aspects are discussed in great detail including the mental attitude of the mother, the physiology of lactation, and preparations for breast feeding before the birth of the infant. Special emphasis is put on the first week of breast feeding, the second week of breast feeding and the so-called danger weeks, the third to sixth weeks of breast feeding when the infant is most apt to be taken off the breast. The latter months of breast feeding and the introduction of solids are also discussed, and there is also a special section on the breast feeding of twins and triplets. Weaning difficulties because of breast disease, the contraindications to breast feeding and indications for weaning are also discussed in detail. There is also a chapter on the feeding of infants with conditions such as cleft palate, who cannot suckle on the breast. The book is well written and presents many strong arguments for breast feeding practically all infants, although the author admits that there are certain contraindications in special cases.

THE TRUTH ABOUT CANCER. Charles S. Cameron, Medical and Scientific Director, American Cancer Society. 268 pp. Illust. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1956. $4.95.

This is a difficult book to review for the medical profession, designed as it is for lay readership. The title is well chosen and it is probably quite true that at no time in the past has such an authoritative collection of information concerning the problem of cancer generally been made available to the public. The difficulty in assessing its value devolves upon the varying interpretations that will be placed upon the factual information outlined in the text by the unversed readers to whom it is directed. Such an obviously sincere attempt to encourage an intelligent appraisal of the term "cancer", a name so long associated with fears, superstitions and social taboos, can only be considered a worthwhile, long-overdue and highly commendable effort. However it is probable that the text may rightly be considered too complete, unnecessarily scientific and likely to produce confusion, despondency and depression amongst any but the most intelligent and educated audience. Nevertheless, much of the material is undoubtedly of great value, particularly that referring to the "cancers" which have early phases during which treatment will appreciably improve the cure rates and in which recognition of these early stages is imperative, if such improvement is to result.

The early chapters deal with the nature and cause of cancer in much detail followed by a discussion of the methods of diagnosis and treatment in this disease. A justified attack upon "cancer quacks" will repay reading not only by lay personnel but also by physicians in general who should have this material at their fingertips when dealing with anxious patients and relatives. Reemphasis of the common danger signals concludes the final section dealing with the specific cancers most frequently encountered. Proper attention is drawn to the need for periodic examination in the age group over 40 years, to the possible benefit of chest x-rays in men over 40, vaginal smear examinations in women over 35, and self-examination of the breast, and to the danger of cigarette smoking. The photographs and illustrations are well chosen throughout. It is felt that these favourable features of the book far outweigh the criticisms levelled at its length and detailed descriptions of the basic scientific aspects of cancer in general.



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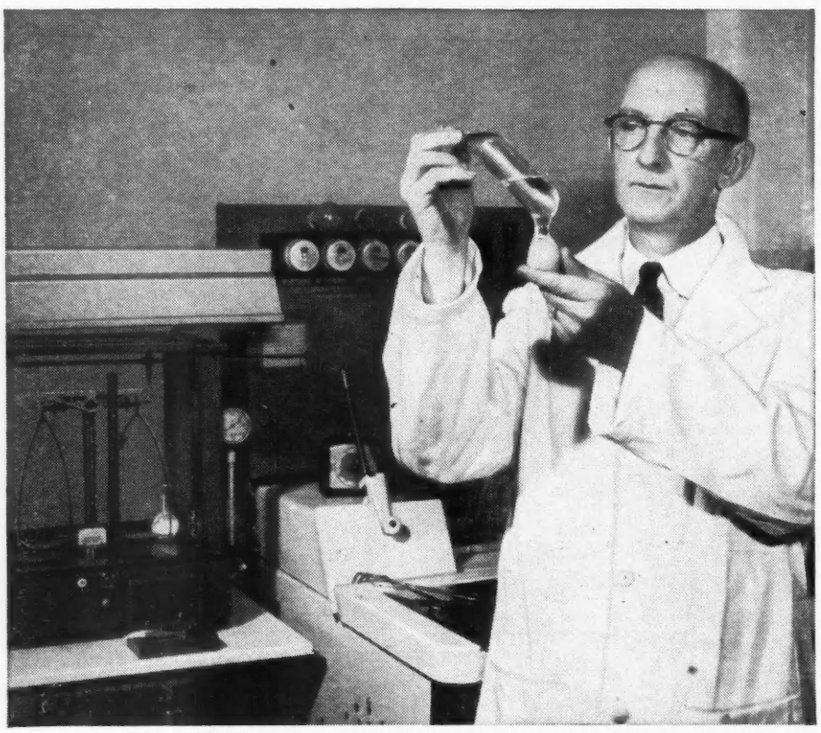
MEDICAL NEWS *in brief*

(Continued from page 150)

CHANGE OF SEX

Since at the end of 1952 the world press began to acquaint the public with the news that it was possible to change one's sex, certain endocrinologists in various centres have been bombarded by requests for the necessary operation. Hamburger of Copenhagen received 755 requests in a single year; these requests came from all over the world, with a very high percentage (38%) coming from the United States. In an article on this subject, illustrated by three case reports, Vague of Marseille (*Presse méd.*, 64: 949, 1956) discusses this "pandemic". He says that persons requesting change of sex belong to a well-recognizable category. In three-quarters of the cases, it is an apparent male who wishes to be transformed into a female. Careful examination of the subject will disclose that he has some faults of male development (distribution of fat, bone characters). Vague thinks it probable that, for example, in France there are about a million persons whose somatic differentiation is not in accord with that of their gonads or of their genital tract. He suggests that the obsessional desire of certain Nordic males to transform themselves into females is related to the gradual approach in western society towards a matriarchy, such as has not been seen since the Trojan War. He is opposed to the performance of this type of operation, except in very exceptional cases.



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SKIMMED MILK AND KWASHIORKOR

Pretorius and his colleagues from South Africa (*South African M. J.*, 30: 447, 1956) report further studies on the use of skimmed milk in the protein-deficiency disease in children, known as kwashiorkor. They confirm that this is the treatment of choice and have shown in their most recent studies that neither vitamin nor protein supplementation of ordinary skimmed milk makes the therapeutic result any better. It does appear that high standards of preparation and packaging of dried milk products are of importance in obtaining results, as shown by healing of skin lesions, loss of œdema and improvement in appetite and well-being, together with a rise in serum albumin level.

INTERNSHIPS IN FRANCE

Our contemporary, *l'Union Médicale du Canada,* announces the success of a visit of the deans of the faculties of medicine of Laval and the University of Montreal who visited France to discuss the possibility of their graduates doing internships in French hospitals. It now appears that graduates from these two medical schools will be able to spend some time in Paris and possibly in provincial French hospitals, serving as third- and fourth-year interns with the usual emoluments and responsibilities attached to these posts. In view of the great importance attached in France to these internships and the difficulty there is in obtaining them, this successful démarche on behalf of Canadian students must be hailed as a success.

COCONUT IN THERAPY

Shah and his colleagues from Bombay (*Indian J. M. Res.*, 44: 341,

(Continued on page 43)

MEDICAL NEWS *in brief*

(Continued from page 40)

1956) describe the use of coconut water as a therapeutic aid in congestive cardiac failure. They noted that coconut water was very low in sodium and very high in potassium and treated 10 cases of congestive cardiac failure with peripheral œdema, dividing cases into groups, one given coconut water and the other the typical Karrel diet. They report that patients receiving coconut water in amounts from 1,650-2,000 c.c. a day experienced a good diuretic effect with significant increase in the excretion of sodium and considerable loss of body weight. Results were far better than those on a milk diet.

A.M.A. PLANS INTERNATIONAL MEDICAL FILM PROGRAM

A special program of foreign-made medical films will be an added feature of the 106th Annual Meeting of the American Medical Association to be held in New York City in June 1957. This film program will be presented in co-operation with Johnson and Johnson, New Brunswick, New Jersey, as a part of the scientific program, bringing before the doctors attending the meeting outstanding motion pictures produced abroad dealing with many aspects of medical science. Films for the program will be selected from applications submitted by authors and producers from other countries. The assistance of United States Government agencies, Johnson and Johnson's foreign affiliates and international medical organizations will be utilized to publicize and aid in making this a most worthwhile program.

Applications for the program and further information can be obtained from the American Medical Association, Motion Pictures and Medical Television, 535 North Dearborn Street, Chicago 10, Illinois.

MORTALITY FROM CANCER OF DIGESTIVE ORGANS

Next to heart diseases, cancer is the largest cause of death in the majority of highly developed countries. Highest on the list of cancer deaths—from 39 to 73% of the total, according to country—are those caused by cancer of the digestive organs (œsophagus, stomach, small intestine including duodenum, large intestine, rectum, biliary passages, liver, pancreas and peritoneum).

The World Health Organization has recently published statistics on mortality from malignant neoplasms of digestive organs and peritoneum in 26 countries since the beginning of the century. Mortality from cancer of the digestive organs is higher in men than in women. Stomach cancer is responsible for the majority of cancer deaths in both sexes, immediately followed by cancer of the large intestine and the rectum.

In the mortality from all cancers of digestive organs:

STOMACH CANCER REPRESENTS:

Countries	*M.*	*F.*
Canada	39.9%	28.2%
Italy	57.4%	50.2%
Japan	70.3%	66.0%
United Kingdom..	40.0%	34.2%
United States ...	31.5%	22.6%

LARGE INTESTINE CANCER REPRESENTS:

Countries	*M.*	*F.*
Canada	21.2%	34.1%
Italy	7.9%	12.0%
Japan	2.0%	4.2%
United Kingdom..	20.6%	29.9%
United States ...	23.2%	34.4%

RECTUM CANCER REPRESENTS:

Countries	*M.*	*F.*
Canada	13.1%	10.1%
Italy	5.9%	5.8%
Japan	4.2%	5.0%
United Kingdom..	17.0%	13.5%
United States ...	13.0%	12.1%

Mortality from these malignant neoplasms increases from the age of 40 onward and becomes very important after 60.

According to the WHO study, in England in 1953, 44.6% of all cancer deaths were caused by cancer of the digestive organs; in Spain 48.9%; in France 50.1%; in Italy 54.6%; in Sweden 52.7%; in Switzerland 50.6%; in Canada 46.7%; in Chile 62.6%; in the United States of America 39%; in Uruguay 54.6% and in Japan 73.3%.

A remarkable increase in cancer deaths since the beginning of the twentieth century is clearly shown in the statistical tables of the WHO report. In Canada, for example, the mortality rose from 7.1% of all deaths in 1920 to 14.5% in 1953.

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NEW ENGLAND POSTGRADUATE ASSEMBLY

The Fourteenth Annual New England Postgraduate Assembly will be held at the Hotel Statler in Boston, October 30, 31 and November 1, 1956. Designed especially for the practising physician, this year's Assembly will feature lectures, symposia, panels, luncheon panels and round table discussions, and clinical - pathological conferences. Carefully selected and previewed medical films will be shown.

Dr. Robert P. McCombs of Boston is chairman of the committee arranging the program.

Information from: New England Postgraduate Assembly, 22 The Fenway, Boston 15, Mass.

PAN-PACIFIC SURGICAL ASSOCIATION

The Seventh Congress of the Pan-Pacific Surgical Association will be held in Honolulu, Hawaii,

(Continued on page 44)

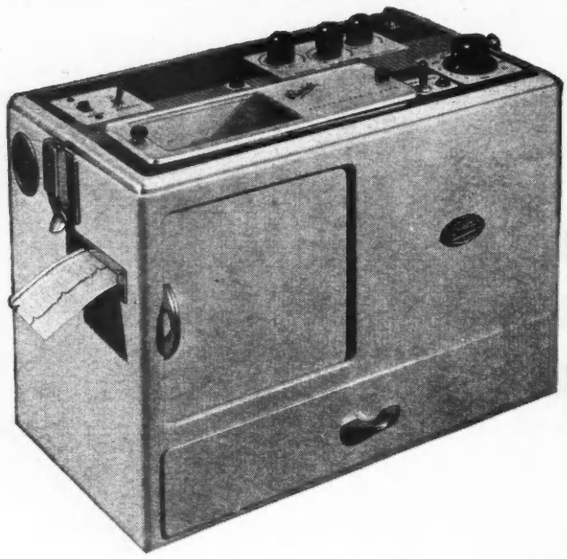
MEDICAL NEWS *in brief*

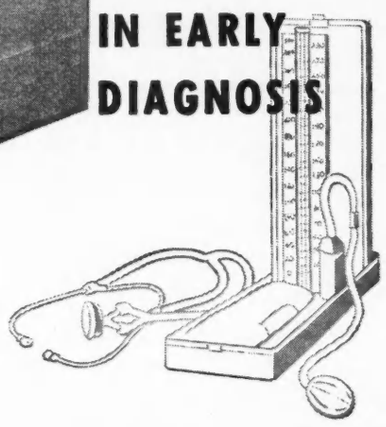
(Continued from page 43)

November 14-22, 1957. All members of the profession are cordially invited to attend and are urged to make arrangements as soon as possible if they wish to be assured of adequate facilities.

An outstanding scientific program by leading surgeons with sessions in all divisions of surgery and related fields promises to be of interest to all doctors.

Further information and brochures may be obtained by writing to Dr. F. J. Pinkerton, Director General of the Pan-Pacific Surgical Association, Room 230, Young Building, Honolulu, Hawaii.





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A NEW COURT CLINIC IN TORONTO

On May 1, 1956, the Government of Ontario opened a forensic clinic to serve the courts in metropolitan Toronto. The clinic will operate as a division of the Toronto Psychiatric Hospital, which is affiliated with the department of psychiatry of the University of Toronto.

Statutory authority is provided so that a court may order an examination of the physical and mental condition of any person. The clinic may report the results to the court. In addition to these diagnostic arrangements the clinic will also undertake treatment without charge to the patient.

The new clinic is an outpatient clinic and is in addition to the inpatient forensic services which have been a function of the Toronto Psychiatric Hospital since 1926.

It is considered that the facilities of the clinic may be particularly useful in the case of persons charged with sex offences. However, the clinic is not restricted to such cases and a court may arrange for an examination in any case where the judge or magistrate believes the procedure would be useful.

—

JOURNAL OF NATIONAL CANCER INSTITUTE

The *Journal of the National Cancer Institute* is now being published monthly, starting with Volume 17, Number 1, July 1956. This change of schedule, after 16 years of bimonthly publication, has been made to increase the publication outlet for investigators engaged in cancer research. Papers on basic research, clinical investigations, statistical studies, and critical reviews in cancer are invited. The Journal may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Any change in price for future volumes will be announced.

—

DISINFECTION OF CATHETERS, CYSTOSCOPES, BRONCHOSCOPES . . .

A simple apparatus and a reliable method for the disinfection of catheters, cystoscopes, bronchoscopes, etc., is described by Bekker and Onvlee of Utrecht (*Nederl. tijdschr. geneesk.*, 100: 1491, 1956). They disinfect in a vessel from which the air has been evaporated

by suction and replaced by a mixture of 10% ethylene oxide and 90% carbon dioxide. The gas mixture, which is not explosive and does not damage the instruments, is allowed to act for eight hours at a temperature of 37° C. The instruments are packed in cellophane before sterilization and can be stored and transported sterile after disinfection. The apparatus is simple to mount and easy to work, and the disinfection is reliable.

—

AMERICAN COLLEGE OF SURGEONS

The world's largest meeting of surgeons, the 42nd annual Clinical Congress of the American College of Surgeons, will take place in San Francisco, October 8-12, 1956.

For the first time, student representatives from 16 medical schools will attend the Clinical Congress at College expense. The College believes that education obtained through attendance at scientific programs such as the Congress is as valuable to students as to practising physicians. In support of this belief, and in co-operation with deans of approved medical schools in the U.S.A. and Canada, it is planned that a number of senior medical students will attend Congress meetings every year. Schools will participate in rotation, depending upon the geographical location of the meeting. Students will be selected by vote of their classmates. At the Congress, Fellow-sponsors will meet with and advise the students daily, to insure that each student obtains the maximum benefit from this educational experience.

Major addresses at the Congress will be presented by Dr. Daniel C. Elkin, Lancaster, Kentucky, incoming President of the College, and by Dr. Vannevar Bush, New York, noted engineer and scientist. Dr. Michael L. Mason, Chicago, will give the annual Oration on Trauma, speaking on "The Treatment of Open Wounds".

Further information from: American College of Surgeons, 40 East Erie Street, Chicago 11, Ill.

—

INCOME TAX ON ACCOUNTS RECEIVABLE

"It has been our experience that a large number of persons whose income is on a fee basis—doctors, dentists, lawyers, accountants, architects, etc.—are not aware of the fact that, under certain circumstances, amounts owing to them become subject to income tax at the time of death. As an example, take a doctor's book accounts; a doctor usually pays income tax on fees actually collected by him, but at the same time his records reflect many hundreds of dollars owing to him. These book accounts, less a reasonable allowance for those which may be uncollectable, become taxable income when the doctor dies. It is not difficult to imagine the large tax liability that would then result in certain instances.

"It is sometimes possible to reduce the tax liability. If a named beneficiary is given the accounts by Will, such beneficiary rather than the estate becomes responsible for the tax in the year in which the accounts are collected. Accordingly, where it is likely that the accounts will be collected over a

(Continued on page 46)

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The investigators report on a total of 109 cases of herpes zoster and 313 cases of neuritis, all of whom were seen in private practice. All but one patient in each category responded with complete recovery.

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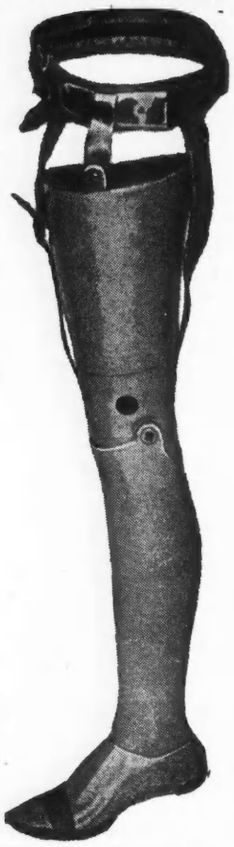

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MEDICAL NEWS *in brief*

(Continued from page 45)

number of years and the beneficiary is in a comparatively low income tax bracket, this plan has much to recommend it. However, in other cases it may be extremely costly. . . .

"If the accounts are not given by Will to a named beneficiary, three methods of calculating the tax payable are available to an executor. The accounts may simply be added to the deceased's other income of the year up to the date of death, or the executor may file a separate tax return, claiming all exemptions, as if such accounts were the deceased's only income for the year. The third method allows the executor to divide the total of the accounts into five equal portions, add one portion to the income of each of the four years prior to the year of death and recalculate the tax. The remaining portion is added to the other income of the year of death. The method chosen will, naturally, be that which results in the least amount of tax being paid.

"We recommend that professional people having book accounts of the same nature as those under discussion give careful consideration to all tax implications before deciding whether such accounts should be given to a beneficiary by Will or retained as part of the estate."—*Canada Trust Bulletin*, May 1956.

—

KITCHENER INDUSTRIAL HEALTH SERVICES PROJECT

In Kitchener, Ont., a project has been recently completed known as the "Kitchener Industrial Health Services Project" which was essentially a demonstration of the possibilities of establishment and operation of health services in a group of seven small plants. Results have been so satisfactory that in six of the seven participating plants an individual health service is to continue at the plant's own instigation. The seventh firm indicated satisfaction with the service and suggested that it might be resumed when they had more employees. The project was sponsored by the Kitchener Board of Health and the Ontario Department of Health, and health services were provided free of medical cost to the participating company, expenses being met by a Federal health grant.

—

PAN-AMERICAN SANITARY ORGANIZATION

The Executive Committee of the Pan-American Sanitary Organization met in Washington June 5-13, with Dr. Jorge Jiménez Gandica of Colombia in the chair. Various resolutions were adopted for final action by the PASO Council at its meeting next September 16 in Antigua, Guatemala. A budget of $2,400,0000 for 1957 was approved by the Committee. Emphasis was laid on the program of world-wide eradication of malaria. A proposal was approved in principle for achieving maximum uniformity of legislation throughout the Americas for the registration of drugs.

—

EDITORIAL COMMENTS ON HEALTH INSURANCE

The *Winnipeg Tribune* has printed in brochure form editorial comments on national health insurance for Canada, compiled from its editorial pages. In a foreword to this compilation it is stated that the *Winnipeg Tribune* was the first daily newspaper in Canada to come out solidly against national health insurance, which it maintains to be unnecessary because of the wide coverage given by voluntary plans and by present facilities for the care of indigents. The *Tribune* has advocated catastrophe insurance, which would be far cheaper and yet give the security that people want. The brochure of 32 pages contains in chronological order editorial comments which have appeared over a two-year period from March 1954 to March 1956.

—

LIFE INSURANCE FELLOWSHIP FUND

Thirteen separate research projects at 10 of Canada's medical schools will receive financial assistance from the Canadian Life Insurance Medical Fellowship Fund this year. The Fellowship Fund, now in its eighth year, is filling a need in Canada in the field of education and research that is not being met through the various government and other fund-granting bodies in the country. In many instances the Fund has enabled universities to encourage and retain members of their staffs who would otherwise have gone elsewhere.

Eight of these annual grants are renewals to allow the scientists to continue their work. The other five are new research projects. Awarded fellowships this year are: University of Alberta, Dr. E. C. Elliot (new); University of British Columbia, Dr. G. E. Dower (renewal); Dalhousie University, Dr. J. W. MacIntosh, Jr. (new); Laval University, Dr. Bernard Belleau (new); University of Manitoba, Dr. Peter Gaskell (renewal); McGill University, Dr. M. M. Tunis (renewal), Dr. N. K. M. de Leeuw (renewal) and Dr. C. P. Giroud (new); University of Montreal, Dr. Aurele Beaulnes (renewal); Queen's University, Dr. L. S. Valberg (new); University of Toronto, Dr. Calvin Ezrin (renewal) and Dr. W. J. Horsey (renewal); University of Western Ontario, Dr. C. R. Engel (renewal).

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THE SECOND INTERNATIONAL CONGRESS ON MEDICAL RECORDS

The Second International Congress on Medical Records con-

(Continued on page 48)

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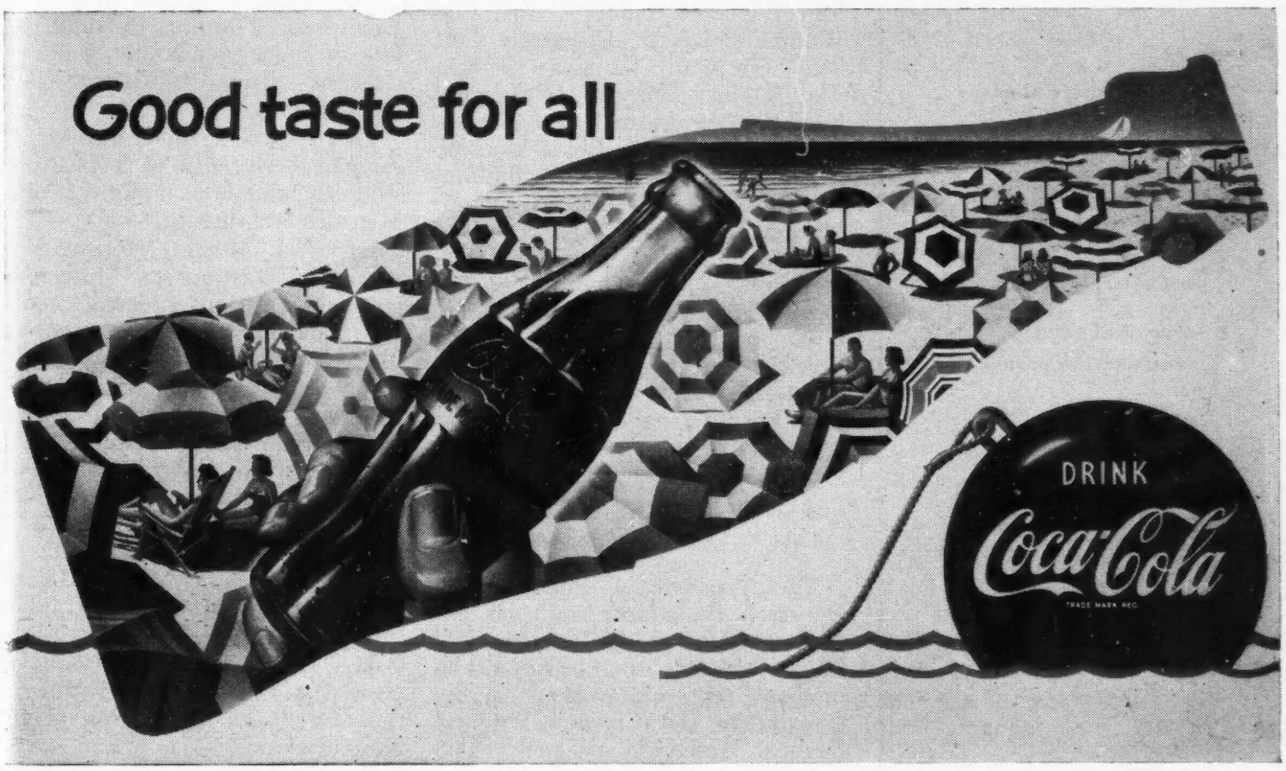

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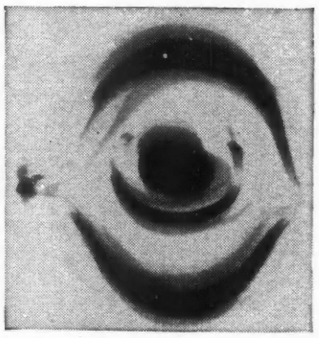

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MEDICAL NEWS *in brief*

(Continued from page 46)

venes at the Shoreham Hotel, Washington, D.C., October 1-5, 1956. The Congress is sponsored by the American Association of Medical Record Librarians, the Association of Medical Record Officers of the United Kingdom, the Canadian Association of Medical Record Librarians and the Australian Federation of Medical Record Librarians. Outstanding medical and hospital authorities of the different nations represented at the Congress will address the group on medical care and health program administration and on education and scientific research as they relate to medical record activities.

Among the speakers now scheduled for the Congress are: William S. Middleton, M.D., Chief Medical Director, Veterans Administration, Washington, D.C.; G. A. Winfield, M.D., Director, Medical Research Statistics, Department of Veterans Affairs, Ottawa, Canada; Mr. R. G. Heppell, Royal Free Hospital, London; Miss Frances Gillespie, President, Rachel Forster Hospital for Women, Sydney, Australia; William Pakeman, University College Hospital, Jamaica, B.W.I.; Alan Treloar, Director of Hospital Facilities, American Hospital Association; Mrs. Elsie Royle-Mansell, Christie Hospital and Holt Radium Institute, Manchester, England; Mindel C. Sheps, M.D., Harvard Medical School, Cambridge, Massachusetts; Mr. George St. J. Perrott and Howard M. Kline, Ph.D., of the U.S. Public Health Service, and many others. Social events and visits to local hospitals have been arranged.

BANTING RESEARCH FOUNDATION GRANTS

The Trustees of The Banting Research Foundation at their annual meeting held on June 14 made 16 new awards of grants-in-aid to medical research workers across Canada to help finance original medical research projects. The recipients are:

Dr. E. Baer, University of Toronto, to study the intermediate steps in the oxidation of carbohydrates.

Dr. I. T. Beck, Royal Victoria Hospital, Montreal, to study acute pancreatitis in experimental animals.

Dr. S. A. Bencosme, Queen's University, Kingston, to study further the function of the A-cells of the pancreas.

Dr. G. C. Butler and Mrs. Stella Hu, University of Toronto, to study the biosynthesis of nucleic acids by bacteria.

Dr. W. A. Cochrane, Hospital for Sick Children, Toronto, to study abnormalities of the blood sugar level in infants.

Dr. K. C. Fisher and Mr. S. Dales, University of Toronto, to study the metabolism of cells in tissue culture.

Dr. G. Gamarra, Toronto General Hospital, to study the development of the muscles of the female urethra.

Dr. C. S. Hanes and Mr. A. T. Matheson, University of Toronto, to study the part played by nucleic acid in protein synthesis.

Dr. J. K. N. Jones and Mr. M. Perry, Queen's University, Kingston, to study the specific carbohydrates in the capsule of pneumococci.

Dr. W. Kalow and Mr. R. O. Davies, of Toronto, to study the fate of succinyldicholine, a muscle relaxant drug, in animals and human beings.

Dr. S. J. Klebanoff and Mr. L. Zonger, University of Toronto, to study the metabolism of glutathione in health and disease.

Dr. R. I. Merritt, Queen's University, Kingston, to study the crossing of various molecules across the placental barrier between the blood supplies of mother and child.

Dr. J. H. Quastel and Mr. M. Franklin, McGill-Montreal General Hospital Research Institute, Montreal, to study the mechanism of acquired resistance to drugs affecting the nervous system, such as morphine.

Mr. B. H. Sells, McGill University, Montreal, to study the fragility of capillaries.

Mrs. J. Stachenko, McGill University, Montreal, to study further the activity of the cortex of the adrenal gland.

Dr. Norma F. Walker and Dr. Irene Uchida, Hospital for Sick Children, Toronto, to study the genetic factors behind the association of heart abnormalities and mongolian idiocy.

(Continued on page 50)

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MEDICAL NEWS *in brief*

(Continued from page 48)

MENTAL ABILITY OF PREMATURE CHILDREN

Douglas of the University of Edinburgh has recently published the fourth of a series of papers describing the growth and development of a national sample of premature children in the United Kingdom (*Brit. M. J.*, 1: 1210, 1956). The present paper describes the results of reading, vocabulary and picture intelligence tests in a sample of 707 premature babies weighing less than 5½ lb. (2.5 kg.) at the age of 8. The achievements of these children were compared with a carefully matched series of controls. It was found that premature children scored less than the controls in each of the three types of test, being proportionately the most handicapped in reading. This handicap did not increase significantly either with a falling birthweight or a decreasing length of pregnancy. In general the handicaps were small but detectable.

—

WORLD HEALTH ORGANIZATION PROGRAM FOR 1957

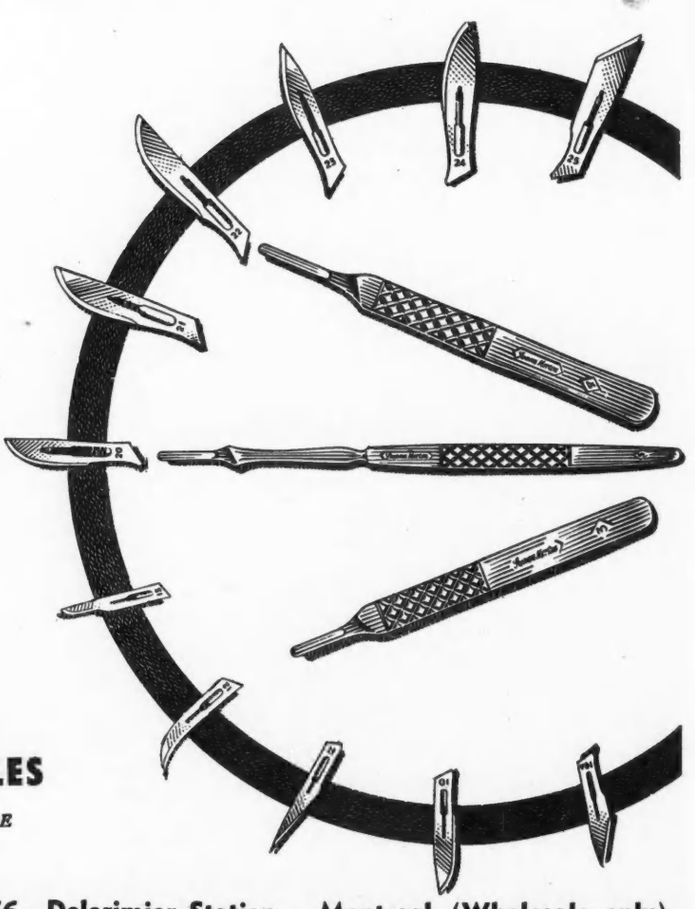
At the Assembly of the World Health Organization which recently closed in Geneva, certain details of the proposed WHO program for 1957 were discussed. Particular attention was paid to the following subjects.

Atomic energy. — The Assembly approved a program in this field, covering training of public health personnel, development of standards, and studies of health risks connected with radiation and radioactive waste disposals.

Malaria eradication. — The Assembly noted that a number of countries had already made good progress in malaria eradication campaigns and called on governments to strive for eradication as soon as possible; this is regarded as essential in order to avoid possible danger of mosquitos developing resistance to insecticides.

Heart diseases.—It was agreed that WHO should intensify its work and its investigation in the field of heart disease. It appears quite clear that in a large number of countries rheumatic, hypertensive and coronary heart disease are on the increase and are causing an increased number of deaths.

The technical discussions held at this year's Assembly were on the subject "Nurses, their Education and their Role in Health Programs". All the delegates to the Assembly took part in these discussions, which were chaired by Dame Elizabeth Cockayne, Chief Nursing Officer, Ministry of Health, United Kingdom. The President to the Assembly was Professor Jacques Parisot, Professor of Public Health and Social Medicine in the University of Nancy, France.



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